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DEVELOPMENT OF THE STRUCTURE
FOR AN IMPROVED LOGISTICS RESOURCE
DATA BASE FOR THE FYDP

May 1977

Cornelius F. Day
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Department of Defense (DoD) management has recognized the need to improve the programming, planning, and budgeting of logistics resources. The report presents a structure for a Logistics Resource Annex (LRA) to the Five Year Defense Program (FYDP), defines a set of logistics information elements, and discusses a variety of data sources for both historical and program information. The basic objectives of the study were to		

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cont

20. Abstract (continued)

→ design a practical LRA based on existing data systems so that logistics resources can be identified by function to weapon system or force unit support, and so that logistics resources can be aggregated by function across weapon systems.

The present FYDP structure is inadequate for displaying base level logistics resources. It gives a distorted view of weapon system program cost. The suggested LRA structure offers a significant improvement, although falling somewhat short of identifying all logistics resources to weapon systems. In addition, the structure allows both logistics resources and outputs to be identified by functional decision packages such as supply, maintenance, or transportation. Sources of historical or program data inputs are identified for each information element included in the LRA and the information elements are reconciled to other DoD/USAF information systems such as the Operating and Support Cost Estimating Reference (OSCER) system, the Force and Final Program (F&FP) of the Air Force, the Central Manpower Data Bank, and the DoD Functional Codes.



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EXECUTIVE SUMMARY

PURPOSE AND SCOPE

This report presents the results of LMI study efforts conducted under Task 75-12, "Development of the Structure for an Improved Logistics Resource Data Base for the FYDP." Outputs of the task were to include definitions of a set of logistics information elements (LIEs) and a structure within which the LIEs would be organized. The objectives to be achieved by defining and structuring a LIE data base are to provide a capability to:

- Identify relevant logistics support cost by function to force units or weapon system supported
- Aggregate logistic resource consumption by function across force units and weapon systems

A Phase I report specifying the technical approach for the study was published on November 7, 1975. This report included a study plan which was submitted for approval to the project sponsors. The plan was given tentative approval and further work was authorized, but LMI was constrained to confine the research activity undertaken on this task to OSD and USAF Headquarters organizations until full approval of the plan was granted. This report reflects the research work accomplished within that constraint and also incorporates information developed on related LMI task efforts.

The scope of the LMI effort was limited to developing a LIE structure for a single service, the Air Force. Similar tasks were assigned to the Institute for Defense Analyses relating to a LIE structure for the Navy and the General Research Corporation for the Army's LIE structure. The LMI, IDA, and GRC tasks were conducted under different guidance and constraints so that direct comparisons of the research results may be difficult. The LMI LIE structure has been derived from definitions in existing data systems to the extent feasible. This has effectively minimized the requirement for new data generation although changes in the methods of data aggregations may be required at

the Major Command level. The LMI structure must be viewed as tentative, however, since LMI could not conduct the necessary field verification because of study constraints.

The primary goal of the LIE data base and structure is to establish a program data base for support of planning and programming logistics resources at OSD level. The system developed must be compatible with, but not necessarily included in the FYDP. Early in the development of the study it was mutually agreed that a Logistics Resource Annex (LRA) to the FYDP rather than a drastic internal change to the existing program element structure would serve to accomplish these purposes more effectively.

LMI believes that a data base made up of a well-defined set of LIEs will be more useful to the OSD logistics staff than a set of static resource displays. Logistics information requirements are issue or decision oriented and the resources relevant to one type of decision may not be relevant to another. This preference is supported by the results of a survey of potential users. With a few exceptions, OSD functional analysis could not specify their minimum data requirements in advance. The displays shown in Chapter IV often include more detail than is likely to be required, but are presented to assist potential users in their evaluation of the LRA concept.

SUMMARY OBSERVATIONS

The following observations provide a basis for the major conclusions reached during the course of this study.

U.S. Air Force Organization

The Air Force is organized and managed through functionally oriented major and subordinate units. A Wing, for example, consists of squadrons, each of which provides an identifiable set of operations, logistics or personnel support services. For efficiency reasons, many support functions are consolidated at base level to provide services to all units on the base. Since it is not unusual for elements of one major command to be stationed on a base operated by another, complex host-tenant relationships have evolved.

The combination of organizational structure and basing policy which makes it difficult to identify base level resources to weapon systems, had a major impact on this study.

Five-Year Defense Program (FYDP)

The current OSD program structure does not provide adequate visibility to logistics resources by function or weapon system as is needed for PPB analyses and reviews in the logistics area. Resources are aggregated to the program element level in the FYDP. The program element structure does not provide clear weapon system identification and was not designed to display logistics information. Some PEs, like those for F-4, B-52 or Titan Squadrons are weapon system oriented, but include both logistics and non-logistics resources in the aggregate. Other PEs represent a composite of systems and also include both logistics and non-logistic resources. Some logistics PEs, like base operations, need to be disaggregated by subfunction (supply, transportation, procurement, transient aircraft maintenance) to be useful. The Depot Maintenance PE should be disaggregated by system to the extent possible. Other logistics PEs, however, may provide sufficient information if augmented by detail available, but not normally forwarded to OSD.

Force and Financial Program (F&FP)

The USAF F&FP, prepared by Headquarters USAF, includes a developed integrated data base to support preparation of the USAF input to the FYDP. Resource requirement data contained in the F&FP data base reflect more detail than is forwarded to OSD as input to the FYDP. Some of this detail reflects better identification of logistics resources than is available in the FYDP. Procurement funds for initial and replenishment spares and Class IV and Class V modifications are available by weapon system (MDEC) in the F&FP data base. The major portion of stock fund maintenance materiel is programmed by system for aircraft and could be identified. Consumption of industrial-funded material or activities (except for depot maintenance) are programmed as separate elements of expense. Display of these data in an LRA implies only minor changes to existing reporting practices.

Other OSD and USAF Data Systems

Several other data systems contain data elements that may be useful for defining LIEs and as a source of data needed for projecting resource requirements in the new logistics program categories. The USAF accounting system for operations, which reflects USAF organization, identifies base level operations cost to functionally-oriented cost centers. Cost center definitions and data will be useful for disaggregating program element information into meaningful logistics functional and subfunctional information elements. Some PE disaggregation has already been accomplished in an OSD reporting system which requires the Services to report operations cost in each PE by the 13 functional categories defined in DoDI 7220.20. Potentially useful data elements are also contained in the DoD Depot Maintenance and Production Reporting Handbook DoDH 7220.29H, and Cost Accounting for Central Supply Management, Industrial Preparedness, and Terminal Operations DoDI 7220.17. While useful sources of historical data, none of these systems could provide direct input to the LRA.

The continuing interest in life cycle cost for a variety of purposes, including the DSARC process, has resulted in the development of several operating and support cost systems. Fundamental differences between the program data base and the CAIG cost element structure for DSARC, the USAF VAMOSC/OSCR data system, and the USAF MCS render the latter group of sources not particularly useful for programming purposes. If the planned collection and storage of base level data is implemented, however, it could provide useful inputs to the programming process.

The Central Manpower Data Bank (CMDB) is a source of both historical and program data. The CMDB is a manpower data base that identifies authorized personnel to more functional and subfunctional categories than could be used in the LIE data base. Since the basic record in the system also includes unit and location identifiers, functional requirements could be tracked to the systems supported by the particular unit.

MAJOR CONCLUSIONS

Existing USAF and OSD data systems contain the information required to establish an improved logistics resource data base or LRA to the FYDP. Excellent identification of resources to logistics functions and subfunctions can be obtained for each major force program or across all programs. Except for maintenance and possibly war readiness materiel, functional identification to weapon systems is unwarranted since it would require arbitrary allocations of joint cost. Reasonable, but imprecise identification of base level maintenance operations resources may be possible, but depot maintenance must be allocated to achieve weapon system identity. Excellent system identification of investment-funded maintenance materiel is available.

A significant improvement can be achieved by drawing from the F&FP, supporting programming documents and the CMDB. The F&FP and its supporting documents provide an RDT&E Annex and a Military Construction Annex which are OSD-prescribed and assumed adequate for those appropriations. The detail used to prepare the Procurement Annex is sufficient to identify most materiel procured to a single or group of weapon systems. Since the F&FP is prepared in Air Force Element of Expense detail, certain expenses (like IF consumption) can be identified to MFP and stock funded maintenance materiel can be identified to aircraft system. No additional detail is available, however, for logistics functions such as base supply, base transportation, security, or procurement which are combined in the Base Operations PE. The CMDB, however, can provide authorized military and civilian personnel and their pay in practically any desired display.

Additional information, greater precision, and perhaps a less cumbersome and more useful system can be developed by developing improved programming methods from available data. The OSD Functional Categories have been incorporated for several years in USAF historical data by PE. Thus, some functional breakdown of PEs is available as a basis for developing programming factors. These are not entirely adequate, however, since several important logistics functions are combined into the Base Services Category.

The cost center structure of the ASO provides excellent functional identification which could be used to modify the FC structure. These data are not available, however, in the Air Force above major commands. To be useful for programming purposes changes in the accumulations of cost center data reported by Commands to Headquarters would be required. In addition, methods for programming resources based on these inputs would also be required.

Improved logistics resource data can be made available to OSD only at some additional cost. Data drawn from the existing program data base imply relatively minor changes in present procedures. The development of information not presently programmed means changes in data reported by major commands, development and incorporation of new program factors, an increase in the size and complexity of the program data base, increased computer capacity, and, perhaps, increased staff to prepare and process the new logistics data.

Thus, while it is easy to document that the existing FYDP does not provide sufficient information for logistics analysts, no firm recommendations on the form or substance of a LRA are possible at this stage. Instead, this status report is intended to provide potential users with the types of information that can, in theory, be made available. If, after review, OSD decides further investigation is warranted, the necessary research required is detailed.

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- A - Logistics Resource Annex Structures: Definitions and Examples
- B - The Air Force Force and Financial Program
- C - Data Systems Potentially Useful in LRA Development
- D - Comparison of LRA and O&S Cost Reporting Systems

I. INTRODUCTION

PURPOSE

An improved logistics resource data base has long been sought by the Office of the Secretary of Defense (OSD). A data base system is needed that will enable OSD level logistics executives to:

- Identify all relevant logistics support costs, by logistics function and subfunction, to the combat force unit and weapon system level
- Aggregate logistics resource consumption (historical and programmed) by specific logistics function and subfunction, across force units and weapon systems

Stated another way, the goal is to establish a data base for support of planning and programming logistics resources at the OSD level.

Research toward the objective has been under way since 1975. From the beginning, it was agreed that the data base system being sought should be compatible with the Five Year Defense Plan (FYDP). Early in the study, it also was agreed that some form of an annex to the FYDP offered the best chance for success, thus the term "Logistics Resource Annex (LRA)" was adopted as a generic description of the system to be developed. It seemed that an LRA, rather than a drastic internal change to the existing program element structure, would be the most effective way of establishing a logistics data base.

The LRA was hypothesized to be built from a set of Logistics Information Elements (LIEs), which to the maximum feasible extent, were to be drawn from existing information systems.

SCOPE

A technical approach for developing an LRA was submitted by LMI during November 1975.¹ Subsequently, LMI was requested to proceed with the identification and definition of LIEs using the November 1975 technical approach, but with research activity

¹Citation.

limited to U. S. Air Force Headquarters activities and OSD level offices. This report documents that research.

It is a status report. No firm recommendations on the form or substance of an LRA are possible at this stage.

ORGANIZATION OF REPORT

Chapter II describes the principal characteristics and a possible structure for a USAF Logistics Resource Annex to the FYDP. Chapter III presents study results and includes such topics as the specific data sources investigated, the FYDP as an aid to the logistics analyst, improvements that can be achieved using data available from various PPB sources, and improvements which require changes in the PPB system. The chapter includes considerable detail so that OSD logistics analysts can make a sound judgment of the utility of a LRA. Chapter IV outlines the additional work required to make an Air Force LRA a reality.

Detailed documentation is contained in a set of appendices. Appendix A contains definitions and example formats for an LRA; Appendix B discusses the USAF Force and Financial Program (F&FP) and supporting documents; Appendix C covers other data systems of potential value; and Appendix D compares the LRA concepts with Operations and Support (O&S) cost-reporting concepts and systems.

II. PRINCIPAL CHARACTERISTICS OF A USAF LRA

Within the Office of the Secretary of Defense, there is widespread recognition of a need to improve planning, programming, and budgeting for logistics resources. Mr. Leonard Sullivan, former Assistant Secretary of Defense for Program Analysis and Evaluation, has stated that "It is probably in the logistics area where the PPBS system has had the least thorough wringing out in the past few years, and it is clearly the biggest lump of essential annual expenditures that we still cannot rationalize in sufficient detail." This realization provided the essential motivation for several studies intended to develop the structure for an improved logistics resource data base for the Five Year Defense Program.

The principal characteristics and the structure of a possible USAF Logistics Resource Annex to the FYDP are presented in this chapter. The characteristics are structured to reflect a rather broad definition of logistics so that the resulting LRA will include all resources affected by program issues that are within the scope of ASD(L&L) authority. In addition, the differences between an LRA intended as a static display of logistics resources and an LRA intended as a static display of logistics resources and an LRA intended as a tool of analysis are discussed. Finally, the characteristics and structure reflect the realities of USAF organization and management policies.

Consideration of Air Force management practices is important to insure that the suggested LRA structure is practical in terms of support data. The Air Force is organized and managed through functionally-oriented major and subordinant units. A wing, for example, consists of functionally-oriented squadrons, each of which provides an identifiable set of operations, logistics, or personnel support services. For efficiency reasons, many support functions are consolidated at base level to provide services to all units on the base. Since it is not unusual for elements of one major command to be

stationed on the base of another, complex host-tenant relationships have evolved. In addition, specialized services such as base communications, air traffic control, weather, or rescue and recovery, are provided to all bases by units (squadrons or detachments) of a single command (AFCS Command for communications and air traffic control, MAC for weather and rescue).

These operational realities have a strong influence on the ability to display logistic resources in the FYDP structure. The FYDP represents the manner in which OSD manages and programs resources. It is not particularly useful to the Air Force since it is not representative of USAF management or operational practices. The PPB process is largely a Headquarters USAF function. Although operations budgets are passed by major command to bases on a PE basis, resources are tracked along functional, not PE lines. When a function supports more than one PE, it is usual practice to assign a significant fraction of total operations resources to the predominant PE. This clouds both weapon system and PE identity of historical data accumulated by PE and forwarded to Headquarters USAF by bases through major commands.

PRIME OBJECTIVE OF AN LRA

One view of the prime objective of an LRA is that it should be the official document for recording and tracking the current status of logistics funding requirements in the program and budget. Resources would be identified to logistics program and functional categories in highly aggregated terms only to provide a framework for displaying the current status of total logistics funding requirements and for displaying resource impacts of logistics support alternatives evaluated during the PPB process. If the LRA is designed only to satisfy these requirements, the data base would be modest in size, but not very useful for support of analyses of logistics resource requirements. It should be noted, however, that the non-logistics segments of the FYDP, including the recent changes made to Program 8 and the Telecommunications area, are structured along these lines. That is,

the current status of funding requirements for telecommunications, training, medical, and other personnel support resources are visible, but insufficient data are available within the FYDP to analyze these activities.

A second view of the prime objective of a LRA is that sufficiently detailed data must be included to support meaningful analyses of logistics resource requirements in addition to reporting the current status. Specific data requirements are determined by the program decision issues to be considered. Logistics functions should be broadly defined to include all resources impacted by potential decisions. The data base should include important non-dollar, but cost determining parameters such as force level, manpower, flying hours, number of operational bases, and other measures reflecting the workload of each logistics activity.

Some program decision issues that are raised frequently and that impact on logistics resource requirements include force level and activity rate choices, basing decisions, assessments of the adequacy of war reserve stocks, and funding for reduction of maintenance backlogs. For recurring decisions it is possible to anticipate specific information needs. Information required to evaluate program alternatives involving changes to organizational structures or operating and support policies will depend on the nature of those changes. Although these information requirements cannot be predicted, retaining a high level of detail in the LRA data base will enhance the probability that information is available when needs arise.

Designing the LRA to include data useful for analysis purposes will significantly expand its scope and size. This approach departs from the philosophy used in prior changes to the FYDP which have focused on providing visibility. The resulting information displays have not, however, been very useful in program analysis.

The LRA structure recommended in this report represents a practical approach. To the extent feasible, information element categories are consistent with those presently used by OSD and the USAF. Because of the limitations of present data systems, the

proposed structure will yield good visibility of logistics resources, but be somewhat less useful for analyses purposes. The proposed structure implies only a modest sized data base. A more ambitious structure would capture more analytical data in a larger sized data base. This would require a substantial departure from existing methods and procedures for preparing and reporting resource requirements in the FYDP.

PRACTICAL CONSIDERATIONS

The basic inputs to the LRA are carefully defined logistic information elements (LIEs). A series of practical considerations guided the process of defining the LIEs and identifying sources of historical and program information.

Use of Existing Data Systems

Existing data systems are sources for LIE data. Several USAF data systems were evaluated and specific data elements of potential use are identified in the appendices to this report.

Minimum changes to existing reporting will be necessary if the data can be obtained from the OSD FYDP, the USAF FYDP, and the USAF Central Manpower Data Bank (CMDB). Where these sources do not identify logistics resources to specific logistics functions and weapon systems, then specific data elements from other OSD or USAF budget or accounting reports may be used to obtain a LIE definition and data source. Such non-program data could be used to establish cost factors needed for projecting resource requirements in future years as is required for inputting data into the FYDP, but would increase the size of the data base.

If a proposed LIE cannot be defined in terms of an existing OSD or USAF data element in a PPB, accounting, or resource consumption report (e.g., manpower, supply, etc.), then it will be necessary to consider whether the benefits of having the LIE outweigh the costs of changing existing or establishing new data collection and reporting systems. The preferred approach is to modify the LIE definition or delete it entirely if the LIE cannot be defined in terms of specific existing data elements.

Compatibility with FYDP

Compatibility with existing programming methods and procedures can be achieved by integrating the LRA into the existing FYDP report production process. FYDP reports are produced three times a year reflecting the service POM submission, the initial Service budget submission, and the President's budget. The LRA could be updated three times a year (as is done for the Procurement Annex) or once a year (RDT&E and Military Construction Annexes).

The resource categories proposed for the LRA are identical to those used in the FYDP. They include categories for forces, funds, and manpower. A complete list of these categories is contained in DoD Handbook 7045.7H, FYDP Program Structure (Codes and Definitions), the handbook defining the OSD data elements used in the FYDP.

Force, fund, and manpower data used in the LRA should be reconcilable to the program element information contained in the main body of the FYDP. This can be accomplished by identifying the resource data in each LIE to the program element containing the resources. The LRA would be a presentation of information that summarizes data from the LIEs. Although the LIEs contain the information needed to produce an output report by program element, it is not anticipated that PE detail will be necessary in the LRA.

Allocation of Joint Cost

The need to prorate costs should be minimized by designing the LIEs to conform to resource categories that can be meaningfully identified to functions and systems in existing reporting systems. Existing base-level USAF budgeting and accounting reports fundamentally identify resources to cost centers (CC) that reflect organizational entities. Organizational entities are functionally oriented so that cost centers can be identified to logistics functions and subfunctions, but not necessarily to weapon systems. Supply, transportation and civil engineering squadrons, for example, are required by and support all weapon systems at an air base. In many cases, avionics, field and organizational

maintenance squadrons support a variety of weapon systems. The problem then exists of how to distribute funding requirements of these organizations over the weapon systems they support. The approach proposed for the LRA would structure LIEs to identify resources to the functionally-oriented organizations represented by cost centers (or groupings of cost centers) without identifying weapon systems. Since no identifiable management purpose is served by allocation of these joint costs to weapon systems, and indeed, existing allocation schemes tend to mask real resource relationships, any attempt to allocate costs to weapon systems could be counter-productive to the over-all goal of improving management of logistics resources.

Only in the maintenance functional area is there limited potential for meaningful direct identification of costs and funding requirements to weapon systems. Even in this area there remain several problems that must be overcome. Work is in progress to develop a DoD-wide depot maintenance cost accounting system. However, a substantial fraction of depot maintenance costs are for work on exchangeable components that are common to several weapon systems. These costs cannot be directly identified to weapon systems, but must be allocated. At base level, maintenance costs are identified to organizational, field, avionics and munitions maintenance squadrons. When these squadrons support several weapon systems, a method must be developed to distribute their costs if weapon system cost visibility is to be achieved.¹

LOGISTICS INFORMATION ELEMENTS

Three categories are developed for constructing Logistics Information Elements (LIEs) which can be used to produce logistics information output reports such as the LRA. The categories are: logistics functions, resources, and programs. Detailed definitions of the categories are included in Appendix A. A summary of the categories and their role in developing LIEs is presented below.

¹At the present time, USAF uses a variety of systems-oriented programming factors in developing the F&FP. No attempt is made, however, to identify all maintenance resources to weapon systems.

Logistics Functional Categories

These categories identify the major functional areas (supply, maintenance, etc.), which are or should be reviewed separately during the PPB cycle. The categories and associated subcategories are summarized in Table 1.

1. Maintenance. The major subcategories under the maintenance functions provide separate entries for maintenance of mission equipment and maintenance of support equipment. Maintenance items funded under the investment appropriations include initial and replenishment spares, modifications, peculiar support equipment and War Reserve Materiels (WRM). These items are centrally procured and managed and cannot meaningfully be identified to separate echelons of maintenance. WRM is listed as a non-add item because it was judged important enough to deserve a separate category. Since WRM includes many items identical to those making up the other Materiel and Equipment Investment entries on Table 1, WRM is listed here for completeness. The maintenance function, therefore, includes all maintenance materiel, but the non-add entry insures that WRM costs will not be double counted in any accumulation of total logistics costs.
2. Transportation. The structure for the transportation function reflects a broad definition of transportation. Although the principal determinants of PCS funding requirements (e.g., average length of duty tours) are a personnel rather than a logistics manager's concern, the transportation manager does get involved in issues relating to selection of transportation mode and establishing requirements for carriers of household goods. The transportation manager should be involved in PPB reviews of PCS costs, but his reviews should focus on non-personnel related issues affecting these costs.
3. Supply. This function includes both base and central supply activities. Supply depots/operations, inventory control points, and procurement operations have

TABLE 1. LOGISTICS FUNCTIONAL CATEGORIES

<u>MAINTENANCE</u>	<u>SUPPLY</u>	<u>INDUSTRIAL PREPAREDNESS</u>
Material and Equipment Investment	Base Supply	Maintenance of Government-Owned Production Facilities
Initial Spares	Supply Depots/Operations	Maintenance of Industrial Plant Equipment
Replenishment Spares	Inventory Control Points	Emergency Production Requirements and Scheduling
Modifications - Class IV		
- Class V	Procurement Operations	
Peculiar Support Equipment		
War Reserve Materiel		
Maintenance of Mission Equipment	<u>BASE OPERATIONS</u>	Preparedness Planning Measures
Organization	Real Property Maintenance Activities	Priorities Allocation System
Intermediate		Manufacturing Technology
Depot	Operation of Utilities Maintenance and Repair	
Maintenance of Support Equipment	Minor Construction	<u>HEADQUARTERS OF MAJOR LOGISTICS BASES</u>
Organization	Other Engineering Support	
Intermediate		<u>OTHER LOGISTICS ACTIVITIES</u>
Depot	Other Base Operations Activities	Family Housing - Defense
Sustaining Engineering Support	(Base Supply) (Base Transportation) Base Security	Laundries
<u>TRANSPORTATION</u>	Base Command and Administration	Printing Plants
Base Transportation Service	Base Personnel Services	Mothballing
People and Personal Property	Other Base Services	
Permanent Change of Station	Base Medical Facilities	Other
MAC	Base Communications	
MSC		
MTMC		
Commercial		
Other Travel	<u>WAR READINESS MATERIEL</u>	
MAC	System Unique Stocks	
MSC		
MTMC	Ammunition	
Commercial	Equipment/Secondary Items	
Other	Stock Funded-Service Controlled	
Transport of Cargo	Stock Funded-DSA Controlled	
Second Destination	Stock Funded-DSA Controlled, Service Programmed	
MAC	<u>Common Stocks</u>	
MSC		
Commercial Air	Ammunition	
Commercial Surface	Equipment/Secondary Items	
Airlift (Not Industrially Funded)	Stock Funded-Service Controlled	
C-5	Stock Funded-DSA Controlled	
C-141	Stock Funded-DSA Controlled, Service Programmed	
C-130		
Other		
	Support of War Reserve Stocks	(Non-add)
	(Supply) (Maintenance) (Transportation)	

separate program elements in Program 7 which means that the existing PPB structure reflects these categories. Further investigation into these functional areas might reveal that their subelements can be identified to weapon systems. This is recommended only in cases when entire work sections or expense elements are dedicated to supply, procurement, or technical support of a weapon system. Arbitrary allocation of supply to weapon systems is not recommended.²

4. Base Operations. This function is broadly defined to include all cost elements that would be impacted by base opening or closing decisions. As discussed previously, personnel managers will be responsible for establishing policies and procedures for operating hospitals or providing base personnel services, but the logistics managers are involved in the base opening and closing decision process. To properly evaluate basing decisions requires that all resources affected be made visible. Base supply and transportation are included as non-add items because they are included under their respective major functional area.
5. War Readiness Materiel. This function includes funding for inventories of WRM, by weapon system where possible, and, as memo entries, the supply maintenance and transportation support required. If feasible, it would be desirable to identify these support costs so that total resource impacts of WRM decisions are visible. It might also be desirable to include some non-dollar measure of inventory levels if possible.
6. Industrial Preparedness. This function includes funding for the activities associated with industrial preparedness.

²Supply Depot/Operations, as defined in DoD Instruction 7220.17, includes terminal operations which are part of the Transportation Squadron at base level. In addition, base procurement is a function of the Combat Support Group rather than the Supply Squadron. These base functions can be identified and included in the Supply Function for consistency if desirable.

7. Headquarters of Major Logistics Commands. This function includes funding to support headquarters operations associated with logistics commands.
8. Other Logistics Activities. This function includes a variety of miscellaneous logistics activities including family housing, laundries, printing plants, and storage of aircraft (mothballing).

Resource Categories

The categories identify types of resources, i.e., funds, personnel, or forces. DoD Handbook 7045.7H specifies the resource categories, called Resource Identification Codes (RIC), used in the FYDP. These should also be used in the LRA. Some additional detail will be required, particularly for the maintenance function where it will be useful to provide separate visibility to civilian personnel, stock funded maintenance materiel, and contract maintenance funds. This level of detail is contained in the F&FP data base.

The major resource categories for funds and manpower are illustrated in Table 2. Funding categories reflect congressional appropriations. Manpower categories reflect authorized year end officer, airmen, or civilian strength. Note that not all funding categories will be appropriate for all functional categories discussed above or program categories discussed below. Table 2, therefore, indicates that such categories as RDT&E and Military Construction (MILCON) will contain dollar entries only "if appropriate."

Force categories, or more precisely, Force FICs, include separate identification of end items (such as aircraft, missiles, or particular communications facilities) that are supported by the funding and personnel resources. Force RICs are, therefore, better discussed under the next heading, Program Categories.

Program Categories

Program categories reflect the weapon systems or major force programs consuming logistics support as illustrated in Table 3. Principal USAF aircraft and missile systems are shown at the mission design level of aggregation (i.e., F-4). The addition of aircraft series

TABLE 2. RESOURCE CATEGORIES

FUNDING CATEGORIES (TOA)

RDT&E - (If appropriate)

INVESTMENT

Aircraft (or Missile) Procurement
Other Procurement
Military Construction (If appropriate)

OPERATIONS

Military Personnel
Operations and Maintenance

TOTAL FUNDING

MANPOWER CATEGORIES

MANPOWER

Officers
Airmen
Total Military
Civilian
Total Manpower

NOTE: O&M Funding can be detailed by selected elements of expense such as civilian personnel, purchased equipment, spares and repair parts - stock fund, or purchased maintenance.

(i.e., F-4) to the program identifiers would expand the size of the LIE data base, may require additional cost allocations, and is probably not required for most PPB applications.

LIE data will be structured to allow displays of resource category information for each major force program by function. The system identifying categories should be used only for the maintenance function, weapon system unique WRM, and other functional areas where direct identification of resource requirements to systems is feasible without significant joint cost allocations. Where direct identification is not possible, then resources by function should be identified to and displayed by the ten Major Force Programs in the LRA.

TABLE 3. PROGRAM CATEGORIES

MFP1	MFP2	MFP4	MFP5	MFP8
<u>STRATEGIC</u>	<u>GENERAL PURPOSE</u>	<u>AIRLIFT/ SEALIFT</u>	<u>GUARD & RESERVE</u>	<u>TRAINING, MEDICAL</u>
B-52	A-7	C-5	CARGO/TANKER	T-37
FB-111	A-10	C-130	FIGHTER	T-38
KC-135	F-4	C-141	INTERCEPTOR	T-43
SR-71	F-15	OTHER	OTHER	OTHER
F-101	F-16			
F-106	F-105			
LGM-25	F-111			
LGM-30	OTHER			
OTHER				

OTHER MAJOR FORCE PROGRAMS

MFP 3 RADAR FACILITIES

MFP 6 AIRCRAFT SUPPORTING R&D

MFP 7 EASTERN TEST RANGE

MFP 9 ADMINISTRATIVE AIRCRAFT

MFP 10 SUPPORT OF SECURITY ASSISTANCE PROGRAM

The Force RICs mentioned above provide convenient identifiers for any systems where separate identification of maintenance (and other) resources is desirable. The RICs have separate codes for all USAF aircraft and missile systems, as well as codes for selected types of facilities and support systems such as communication networks, radars, or cargo handling equipment. Thus, the Force RICs cannot serve to identify major equipment items of interest like F-4 aircraft, but could in some cases be used to identify major equipment supported by a particular Program Category of interest. The Force RICs would, for example, identify the helicopters used to support missile systems. In the present OSD FYDP, these helicopters are not identified even though the resources required for their support is included in the missile oriented PEs.

LIEs Structure

LIEs are constructed by combining logistics functional, resource, and program categories to form data elements for the LIEs data base. Each LIE may also be identified

to a program element or any other category (e.g., element of expense) needed to clearly define cost elements in terms of existing category definitions. Two examples of LIEs are presented below.

<u>LIE 1</u>	Function	- Intermediate Maintenance
	Resource	- Operations and Maintenance Appropriation
	Program	- F-4, MFP2
	EEIC	- Purchased Equipment Maintenance
	Program Element	- 27128F
	Force Level	- Unit Equipment
	Activity Level	- Flying Hours
<u>LIE 2</u>	Function	- Base Transportation
	Resource	- Operations and Maintenance Appropriations
	Program	- MFP1
	Cost Element	- General Support Division-Stock Fund
	Program Element	- 12896F

In the first example, the program category reflects the weapon system supported, the F-4. As discussed previously, this may be appropriate for the maintenance function. In the second example base transportation is associated only to the MFP1 program category because these costs cannot be attributed to weapon systems without making significant cost allocations.

LRA Output

The LRA represents an output report prepared from the LIEs data base. There are many possible ways to summarize LIE data in a LRA. The exact specification of data to be displayed in the LRA should be based on consideration of the information needs of logistics managers who will use the LRA in the PPB process.

A sample display of LRA data for F-4 maintenance is shown in Table 4. More detailed examples are contained in Appendix A. LRA displays for the maintenance

function will contain considerably more detail than displays in other functional areas. Functional areas such as base supply, base transportation, and inventory control can be summarized by major appropriation and manpower category in each MFP. More detailed information from the LIE data base could be made available if requested.

TABLE 4. EXAMPLE LRA DISPLAY
F-4 MAINTENANCE

<u>F-4 MAINTENANCE</u>	<u>Program Years</u>
Force Level (UE)	
Flying Hours	
<u>MATERIEL AND EQUIPMENT INVESTMENT</u>	
Initial Spares	
Replenishment Spares	
MOD Kits - Class IV	
Class V	
Peculiar Support Equip	
Total	
<u>ORGANIZATION (INTERMEDIATE) MAINT OPERATIONS (TOA)</u>	
Military Personnel	
O&M	
Civilian Personnel	
Spares AFSF	
Contract Maintenance	
Other EEIS's	
Total O&M	
Total Operations	
<u>MANPOWER (YR END AUTHORIZED)</u>	
Officers	
Enlisted	
Total Military	
Direct Hire Civilian	
<u>DEPOT MAINTENANCE OPERATIONS (TOA)</u>	
Airframe	
Engines*	
Other Systems*	
Total DMIF	
<u>SYSTEMS MAINTENANCE SUMMARY</u>	
<u>Costs</u>	
Materiel and Equipment Investment	
Operations	
Base Level Mil Pers	
Base Level O&M	
Depot Maint	
Total Operations	
Total TOA	
<u>Manpower - Base Level</u>	
Officers	
Enlisted	
Total Military	
Direct Hire Civilians	
Total	

*Not now available. USAF can provide historical allocations to weapon systems.

III. STUDY RESULTS

The means exist to develop vastly improved information about the resources programmed for logistics functions. Idealized solutions are not practical, however, and should not be attempted. Existing data systems do not identify operations costs to weapon systems because the Air Force does not manage operations resources by weapon system. The costs of obtaining weapon system costs for LRA purposes probably far exceed any benefits to be derived. The ongoing Operating and Support Cost Estimating Reference System (OSCER) may, of course, fill this gap although PPB applications of OSCER are not being considered at this time.

Despite this inability to obtain precise identification of resources to weapon systems, significant improvements in the display of logistics resources by function can be obtained. Some can be accomplished using data already contained in the USAF programming system, but not usually available to OSD. Other improvements can be obtained by aggregating data available below the Air Staff level for use as the basis for improving the functional content of programmed information.

The general characteristics of a LRA were discussed in Chapter II. Several factors must be considered in translating this structure into a set of specifications for the LRA. Perhaps the most important consideration centers around the information requirements of the OSD functional analysts involved with logistics activities. While it was easy to establish that existing information is inadequate, a survey of the functional analysts could not, with some exceptions, identify minimum data requirements. There were at least two major reasons for this situation: (1) many analysts did not know what data could be made available on a routine basis, and (2) data requirements for a particular logistic function, being issue oriented, tend to change as issues change.

Other factors worthy of consideration tend to flow from user data requirements. First, should the LRA be a data display system such as the Procurement or

Telecommunications Annexes, or should it be a data base capable of generating a variety of displays. Should the LRA, whatever its form, be updated with each FYDP update or should a separate time schedule be established. Finally, are the potential benefits associated with changes in USAF programming methods worth the cost of making the changes.

Firm recommendations cannot be made. One factor is clear, however. A LRA cannot be implemented without strong backing from potential users. Therefore, this chapter will concentrate on:

- Improvements that can be made by using PPB data available but not normally forwarded to OSD.
- Improvements that can be made by incorporating data available from Major Commands, but not now included in the PPB system.

The discussion is designed to provide enough information so that the potential utility of an Air Force LRA can be determined. There are, of course, some unanswered questions. If, however, the potential benefits of further work are demonstrated, the research activities outlined in Chapter IV are calculated to provide the required answers.

ANALYSIS OF DATA SYSTEMS

Data problems and the costs associated with filling data gaps are a major consideration in evaluating the LRA concepts to be presented below. An extensive, but by no means exhaustive study of existing OSD and USAF data sources was completed for this research. In general, these sources can be characterized as including two different types of resource data: (1) historical data, that is data covering some period of time before the budget year, and (2) program data, that is information for the budget year and beyond.

The study concentrated on data available to OSD or to Headquarters, USAF. It became apparent, however, that logistics resources consumed at base level present a major problem since such data is not routinely available to either OSD or Headquarters USAF. Several USAF systems which contain base level information were therefore reviewed.

A summary evaluation of the data systems examined is included here. More detailed descriptions, including specific data elements that could be used to define LIEs, are contained in the Appendices.

Five-Year Defense Program

The FYDP is the most obvious source for LIE data. Where the existing OSD program structure is adequate, these data elements can be incorporated in the LRA without change. The current set of program elements in MFP 7 provides adequate visibility to laundries and printing plants for example. Base communications and real property maintenance (RPMA) have separate program elements in each MFP. Although total RPMA costs are visible by MFP in the FYDP, the sub-functional detail in the proposed structure is not visible.

USAF Force and Financial Program

The F&FP is considerably more detailed than the FYDP—it has more data elements of potential relevance to the LRA. In the investment appropriation categories, funding requirements for initial and replenishment spares and Class IV and V modifications are programmed by weapon system. Operations appropriations are programmed by USAF EEIC which reflect a very detailed level of identification of types of resources. Table 5 summarizes the level of detail available in the F&FP data file for a typical aircraft program element. The 38 separate categories for resources (EEIC) seem too detailed for programming purposes and opportunities may exist to substantially reduce the size of the F&FP data bases by collapsing the 38 into the twelve summary categories shown in the table.

The F&FP data is also used to produce a variety of management reports which contain information for a LRA. These include summaries of UE and non-UE aircraft and associated flying hours by PE; Resource Identification Codes (RIC) such as radars, numbered communication systems or special facilities by PE; and the totals for the number of aircraft and their flying hours included in each MFP. Since it is virtually

TABLE 5. F&FP COST ELEMENTS, O&M APPROPRIATION
TYPICAL AIRCRAFT PE

<u>Aggregated Element</u>	<u>No. of EEIC Programmed</u>	<u>Typical Cost (Millions)</u>
Civilian Personnel	5	\$ 2.7
Travel and Transportation	7	
Industrial Funds		\$ 6.5
Other		<u>4.4</u>
		10.9
Purchase Maintenance	2	1.4
Contract Services	1	1.8
Stock Funds	8	
System Support (SSD)		\$27.8
General Support (GSD)		30.7
GSD Exchange Equipment		1.7
Other		(a) <u>70.2</u>
Other Support Base Operations	1	3.7
Miscellaneous Other	9	0.2
AVPOL	<u>6</u>	<u>160.5</u>
Total	38	\$241.4

(a) Less than \$100,000

impossible to identify what is actually supported in each PE from existing FYDP displays, this data could be used as a source of valuable non-funding logistics resource information.

A fundamental limitation to the use of F&FP or FYDP data elements exists because operations costs are aggregated by program elements. Existing program element aggregations do not provide visibility to logistics resources by weapon system or function. For example, the F-4 program element contains funds for aircrews, wing commanders, operations and logistics staffs, base maintenance, and weapon systems security in an aggregate sum.

Other limitations to the present F&FP data base result from the use of a predominancy rule for assigning joint operations and maintenance costs to the

predominant weapon system at an air base, and from the use of the training program element for aggregating costs of several different systems in one program element.

Central Manpower Data Bank

The CMDB is a computerized file of manpower authorization data containing historical information from 1965 to the present time and estimated manpower requirements for five future years. The Manpower and Organization Document (PM), a principal USAF programming document, is an output report of the CMDB. Manpower authorization data in the CMDB are identified to program elements, detailed USAF functional accounts, skill codes, major commands, air bases, unit and several other category codes.

The manpower categories in the CMDB reflect sufficient detail to be useful for identifying manpower to almost any functional or sub-functional category proposed for the LRA. Base Maintenance manpower are identified to program elements, some of which reflect weapon systems. Weapon system information is masked to a certain extent because manpower for all training systems is aggregated into one training program element in MFP1 and 2. It may be possible to disaggregate the training PE by controlling on the unit identifier in the CMDB record.

CMDB data do not necessarily agree with F&FP data. Effects of base closing and other decisions programmed, but not fully approved, are reflected in the F&FP, but not the CMDB. Adjustments to CMDB data are required before using them for LRA purposes.

USAF Accounting System for Operations

The ASO is a rich source of detailed data that can be used to identify the operations appropriations by EEIC to base level functions and subfunctions. Weapon system visibility could be achieved through the program element which has certain limiting features that were discussed previously (i.e., predominance rule and training program element).

Operations costs by EEIC are accumulated to cost centers and responsibility centers (RC/CC) for accounting and budgeting purposes. Cost centers are organizational entities

that can usually be identified to a single function. Tables 6 and 7 illustrate the level of detail provided by cost center data for the Supply, Transportation and Maintenance functions.

TABLE 6. COST CENTERS FOR BASE SUPPLY AND TRANSPORTATION

Supply Squadron

4110	Chief of Supply
4120	Materiel Facilities
4130	Management and Procedures
4140	Supplies Management
4150	Equipment Management
4160	Item Accounting
4170	Fuels Management
4180	Engine Management

Transportation Squadrons

4200	Base Transportation
4210	Vehicle Operations
4220	Traffic Management
4230	Terminal Service
4240	Vehicle Maintenance
4250	Vehicle Maintenance - Non VIMS Bases

There are explicitly defined relationships (crosswalks) between cost centers and USAF functional account codes, OSD functional accounts (discussed below), and program elements. Cost centers are divided into cost accounts to reflect program element categories when more than one program element applies. Crosswalks for Avionics Maintenance are shown on Table 8.

OSD Functional Categories (FC)

These categories are a largely untapped source of historical data which disaggregates PEs by function. Expense data on the logistics functions of supply, maintenance, property disposal, base services, and real property maintenance activities are visible by program element. These categories represent the only functional split of PE information available at the OSD level.

TABLE 7. COST CENTER - MAINTENANCE

WG HQ

2000 CHIEF OF MAINTENANCE

ORG MAINTENANCE

2200 ORG MAINT

2250 BASE FLIGHT & TRANSIENT AIRCRAFT

FIELD MAINTENANCE

2300 CHIEF OF FLD MAINT

2310 FABRICATION SHOP

2320 PROPULSION SHOP

2330 AEROSPACE SYSTEMS SHOP

2340 AGE

2350 BASE SUPPORT/TRANSIENT A/C MAINT

AVIONICS MAINTENANCE

2400 AVIONICS MAINT

MUNITIONS MAINTENANCE

2500 MUNITIONS MAINTENANCE

GROUND COMM - ELECTRONICS - METEOROLOGICAL (CEM)

2600 GROUND CEM EQUIP MAINT

GSE MAINTENANCE

2900 GSE MAINTENANCE

To a great extent, functional categories illustrate that program elements can be disaggregated by function to form a LIE data base suitable for a LRA output report. As a practical measure, it may even be desirable to revise the functional category definitions to reflect the proposed LRA cost element structure. Tables 9 and 10 illustrate the FC content of the F-4 SQ and Base Operation PEs.

TABLE 8. CROSSWALKS OF FUNCTIONAL ACCOUNT CODE,
COST CENTERS, FUNCTIONAL CATEGORIES AND PROGRAM ELEMENT

Typical Avionics Maintenance Squadron

<u>Functional Account Code</u>	<u>Description</u>	<u>Cost Center</u>	<u>Functional Categories</u>	<u>Program Element</u>
2400	Avionics Maintenance			
	Command	2400	03	Prime
2410	COMM/NAV	2400	03	Prime
2411	Radio			
2412	Radar			
2413	ECM			
2414	Doppler/Inertial Nav.			
2450	Prec. Measurement Eq Lab.	240K	03	BOS
2430	Mission Systems	2400	03	Prime
2431	Bomb Nov			
2432	Integrated Sys/Fire Control			
2433	Auto Flight/ In- struments			
2434	Photo Sensors			
2436	Weapons Control			
2436	COMM-NAV-PEV Aids			
2460	Avionics Shop Maintenance	2400	03	Prime
2461	Avionics AGE			
2462	Automatic Test Stations			
2463	Manual Test Stations			

TABLE 9. FUNCTIONAL CATEGORIES (FC) INCLUDED
IN PE 27128, F-4 SQUADRONS

<u>FC</u>	<u>Descriptions</u>
01 - Mission Opo	Includes mission squadrons (cc 30xx), Wing Operations Staff (cc 1300) and POL (cc 97xx)
03 - Maintenance	Includes Chief of Maintenance (cc 2000), Organization Maintenance (cc 22xx), Field Maintenance (cc 23xx), Avionics Maintenance (cc 2400) and Munitions Maintenance (cc 2500).
13 - Administration	Includes Wing Commands (cc 1010), Office of Safety (cc 1060) and the Logistics Staff (cc 1200).

**TABLE 10. FUNCTIONAL CATEGORIES (FC) INCLUDED IN DE 27596,
BASE OPERATIONS FOR ORGANIC WING ELEMENTS**

FC	Descriptions
02 - Supply Operations	Includes Supply Squadron (cc 41xx) and Base Procurement (cc 1250)
03 - Maintenance	Includes Transient Aircraft Maintenance (cc 2250, cc 2350), Precision Measurement Equipment Lab (cc 240K), Office Machine Repair (cc 8461), support to AFSF (cc 8411), and non-flying POL (cc 8471)
04 - Property Disposal	Includes redistribution accounts (cc 461x)
07 - Personnel Support	Includes personnel (cc 1600), Chaplain (cc 1050), Special Services (cc 1950), Clothing Sales (cc 4620), Commissary (cc 4630), Housing and Billeting (cc 4650), Food Services (cc 4670), Base Exchange (cc 4660), Linen Exchange (cc 4680), Dependant Schools (cc \$940), Local Drayage and Civilian PCS (cc 8101), and Military Trainees (cc 8611)
08 - Base Services	Includes the Transportation Sq (cc 42xx), Security Police Sq (cc 4300), Base Operations (cc 4700), Ground Training (cc 4730), Common Communications Expense (cc 8481), Basewide Common Expense (cc 8491) and Support to tenants
13 - Administration	Includes Office of Information (cc 1040), Commander, CSG (cc 1010), Administration (cc 1100), and Comptroller (cc 1500)

OSD Cost Accounting Systems

The systems include the uniform depot-maintenance cost accounting system (under development) and the cost accounting system for central supply management, industrial preparedness, and terminal operations. Both systems provide more detailed subfunctional information for central supply and maintenance (MFP 7) functions. Part of depot maintenance costs are directly identifiable to weapon systems, but about one-third of depot maintenance expenses are for repair of common items which must be allocated if weapon system visibility is to be achieved.

Operation and Support Cost Estimating Reference System

The VAMOSC/OSCER system is a recent effort to identify historical costs by weapon systems, principally to provide cost information in support of DSARC related cost analyses. The system uses input data from 14 different USAF data systems for allocating or estimating weapon systems costs.

The VAMOSC/OSCER approach was necessary because costs are not identified to weapon systems in existing USAF accounting or any other reports. To achieve direct-identification of historical costs to weapon systems in areas where this may be possible (e.g., maintenance, supply, etc.), would require substantial changes to the USAF accounting system which would greatly expand its size and cost.

VAMOSC/OSCER includes only costs that vary with weapon system inventory levels and activity rates, and does not provide the total cost information needed for programming logistics functions. Costs in the current OSCER cannot be identified to specific program elements as is required for LIE data. These and several other dissimilarities between the types of data in OSCER and that required for LIEs precludes the use of OSCER information for constructing LIE data elements.

THE FYDP AS AN AID TO LOGISTICS ANALYSIS

LMI could find no one, either in the OSD or USAF logistics areas, who used the FYDP for any constructive purpose. Its structure simply is not designed to display logistics resources. No document can, of course, be designed to serve all possible uses. However, even with MFP 7, Central Supply and Maintenance, the present structure does more to mask logistics resources than to display them.

There are a total of 567 active USAF Program Elements in the FYDP. The number of PEs by MFP is as follows:

	MFP	PEs
1. Strategic Forces		68
2. General Purpose Forces		62
3. Intelligence and Communications		70
4. Airlift and Sealift		25
5. Guard and Reserve		82
6. Research and Development		173
7. Central Supply and Maintenance		23
8. Training, Medical and Other Personnel Support		38
9. Administration and Associated Activities		19
10. Support to Other Nations		7
	TOTAL	567

Many of the PEs in MFP 1, 2 and 4 are weapon systems oriented (i.e., B-52 Squadrons, Titan Squadrons, F-4 Squadrons or C-5 Squadrons IF). The PEs, even when identified as "Squadrons," do not, in fact, reflect USAF organizational units. Instead, they contain all or part of aircraft squadrons, maintenance squadrons, the Chief of Maintenance element of the Wing Staff, the Wing Commander and his immediate staff, the Logistics and Operations Staff, and, if appropriate, weapon systems security.

PEs in MFP 3 tend also to be activity rather than organizational unit oriented. A particular intelligence PE, for example, involve aircraft, radars and communications systems. A composite PE, such as this, imposes difficult problems so far as logistics resources are concerned. The aircraft may well be maintained by a host wing. If so, identification of maintenance resources is difficult. The ground electronics portion of the PE may be the responsibility of a Communications Squadron or Flight which have organic supply and maintenance capability. In addition, it is conceivable that the Squadron might have responsibility for base communications which could be included in other PEs or even in another MFP.

There is some logic behind the PE structure. Most Fighter Wings in the U.S. and some overseas have at least one squadron which is devoted to combat crew training. The

mission squadrons are shown in the prime PE (i.e., F-4 Squadrons) while the training squadron is shown in PE 27697, Training. While logical, this practice complicates the determination of logistics cost since an appropriate slice of logistics support, or at least manpower support, is also assigned to the Training PE. Perhaps because of the predominance rule, however, O&M-funded resources for training aircraft may remain embedded in prime PE. This is, in fact, true for at least two PEs, F-4 Squadrons and A-7 Squadrons, which include support for T-33 aircraft.

Thus, the FYDP is not structured to reflect logistics resources in meaningful packages and is not very useful to logistics analyses. Perhaps even more important, the F&FP and related documents do not appear to be particularly useful to the Air Force. In its review of the USAF Programming Systems, LMI visited most of the Air Staff offices responsible for F&FP input and preparation. Almost all Air Force participants viewed the FYDP in general, and the F&FP in particular as an "OSD Exercise" which was a necessary step in the decision process, but not particularly useful to the Air Force. As a result, out years, that is those beyond the budget year, do not necessarily receive the careful attention intended when the PPB was installed. With the exception of major force levels and basing changes no real attempt is made to forecast workload changes and resultant impacts.

Depot Maintenance can be used as an illustration. PE 72007, Depot Maintenance IF, while not a TOA entry, does represent total resources expended for depot maintenance. This PE, along with the revenue account (PE 72008) is straightlined because the out year workload from non-Air Force customers (other services, MAP, and FMS customers) is not forecasted. The bulk of TOA for depot maintenance is included in PE 72207, Depot Maintenance Non-IF which represents most Air Force purchases from DMIF.¹ The F&FP programs the following case elements in PE 72207:

- Aircraft Maintenance - DMIF
- Missile Maintenance - DMIF

¹Some depot maintenance TOA is included in MFP 5 for Guard and Reserve Forces and some is included in the Airlift IF accounts in MFP 4.

- Engine Maintenance - DMIF
- Major Item Maintenance - DMIF
- Exchange Item Maintenance - DMIF
- Area Base Support - DMIF

Some of these items are estimated on a system or activity rate basis (airframe is one). However, it appears that Exchange Item Maintenance is used as a balancing item so that the sum of all DMIF element equals some pre-determined TOA for the PE. One thing is sure, however, the five year planning done by AFLC (known to exist but not evaluated for this study) is not used as an input to the F&FP.

LRA APPLICATIONS OF EXISTING DATA

The F&FP data base, the CMDB and other PPB oriented sources can provide valuable logistics resource data. In general, that data available includes:

- Procurement and deployment schedules for new major end items
- Major end items in place which require logistics support
- Programmed aircraft flying hours by MDS
- Logistics manpower in many conceivable formats
- Investment funded maintenance materiel by MDS
- Investment funded War Readiness Materiel by end item
- Stock funded War Readiness Materiel in total and possibly by end item
- Stock funded maintenance materiel by system
- Programmed manpower requirements by logistics function and subfunction
- Other data for specific logistics functions

Care will be required in assembling LRA data when more than one information source is required. The displays discussed below are believed feasible, but have not been tested in practice. In some cases, a maximum level of detail is presented. This will provide functional analysts with a clear understanding of the content of any desired higher level of aggregation.

Many of the displays by logistics function discussed below will include data drawn from the F&FP. These displays can include the detailed Resource Categories available in

the F&FP, that is, OSD or USAF Elements of Expense. As discussed in Appendix C, the more than 100 USAF EEICs can be mapped to the 18 OSD Elements of Expense shown on Table 11. Investment appropriation detail is shown on Table 12.

TABLE 11. DOD ELEMENTS OF EXPENSE

<u>CODE</u>	
1	Military Personnel
2	Military Trainees
3	Military Unassigned
4	Civilian Personnel
5	Travel of Personnel
6	Transportation of Things
7	Utilities and Rents
8	Communications
9	Purchased Equipment Maint (Intra - DoD)
10	Purchased Equipment Maint (Commercial)
11	Printing and Reproduction
12	Other Purchased Services
13	Aircraft POL
14	Ship POL
15	Other Supplies
16	Equipment
17	Other Expense
18	Service Credits

Supply

Base level supply activities are included as part of Base Operations (PE XXX96) in the F&FP. Certain central supply activities are included as specific PEs as follows: PE 71111, Supply Depot/Operations; PE 71112, Inventory Control Point Operations; and PE 71113, Procurement Operations. The F&FP cannot be used as a source of information for base level supply activities. Additional detail by appropriation can be provided down to USAF EEIC for central supply activities if desired.

Detailed data on authorized manpower can be obtained from the CMDB for both base and centralized activities. It is possible to develop estimates of both military and civilian pay from factors used in the F&FP data base or elsewhere.

TABLE 12. INVESTMENT COST ELEMENTS INCLUDED
IN F&FP

APPN 3010 Aircraft Procurement

Peculiar Support
Modifications - Class IV
 Class V
Component Improvement
War Consumables
Common AGE - System
 Simulators
 WRM
Replenishment Spares - System
 MAP
 WRM
Initial Spares - System
 Common AGE
 Simulators
 Modifications
Other Charges

APPN 3020: Missile Procurement

Peculiar Support
AGE
Modernization
Modifications - Class IV
 Class V
Replacement Equipment
Space Programs
Replenishment Spares
Initial Spares - System
 Modernization
 Modification

APPN 3080: Other Procurement

Munitions and Associated Equipment
Vehicular Equipment
Crypto & USAFSS Equipment
Electronic and Telecommunications
Other Base Maintenance and Support Equipment
Modifications - Munitions
 Vehicular
 Crypto
 Electronics and Comm.
 Other Base
Replenishment Spares - Crypto
 Electronics and Comm.
Initial Spares - Crypto

Central supply operations include some functions not performed by Base Supply. Careful selection of Functional Account Codes (FACs) will, however, allow the display of base level activities to be consistent with the centralized activities. Table 13 shows the manpower categories available for Supply Depot/Operations. Each minor heading represents a specific FAC. These have been grouped under each major category for convenience. Note that Traffic Management and Munitions Storage are not considered supply functions at base level.

TABLE 13. FAC FOR SUPPLY, DEPOT/OPERATIONS

(FAC 4800 Series)

Management Services (481X) - Administration Support, Production Control, Industrial Engineering (Supply and Transport), Plans and Analysis

Materiel Processing (482X) - Facilities Services, Centralized Materiel Receiving, Materiel Storage, Munitions Storage, Animal Support - Working Dogs, Combat Logistics Supply Support, Materiel Processing Operations, Harvest Eagle Support, Weapons Control and Storage.

Depot Supply (483X) - Requirements and Control, Depot Support, Full Support, Depot Supply Operations Services.

Installation Equipment Management (484X) - Equipment Control, Operational Support Services, Equipment Authorization and Allowance

Quality Management/Materiel (485X) - Quality Analysis/Materiel, Inventory Management, Quality Control/Materiel

Redistribution and Marketing (486X) - Surveillance and Support, Receiving and Inspection, Marketing, Property Control and Redistribution

Transportation Operations Management (487X) - Air Terminal/LOGAIR, Packing and Preservation, Passenger and Personal Property, Shipment Planning, Surface Terminal, Combat Logistics Transportation Support, Transportation Operations Services

Packing and Transportation Support (488X) - Packing and Materiel Handling, Traffic Management, Air Munitions Traffic, Aerospace Fuels Traffic Management, Aerospace Fuels Regional Traffic Management, Packing Evaluation Services

Cargo Management (489X) - Cargo Control

Table 14 shows the manpower categories available for Inventory Control Points while Table 15 shows those available for Procurement Operations. Note that base level procurement is the responsibility of the Combat Support Group. Table 16 shows some miscellaneous supply oriented categories not associated with Supply Depots, ICPs, or Procurement Operations. These are generally restricted to AFLC, numbered Air Force or Major Commands and are included for completeness. Table 17 shows base level manpower categories which are compatible with the centralized functions shown on Tables 13 to 16.

TABLE 14. FAC FOR INVENTORY CONTROL POINTS

(FAC 3900 Series)

Materiel Management (39XX)

Systems Management (3910)
Item Management (3920)
Service Engineering (3930)
Logistics Systems Management (3940)
Data Products (3950)
Materiel Services (3960)
Materiel Management - Miscellaneous (3990)

TABLE 15. FAC FOR PROCUREMENT OPERATIONS

(FAC 1250 Series)

Central Procurement (1252)
Production (1253)
Contract Administration (1254)
Quality Assurance (1255)
Contract Pricing (1256)
Procurement Career Trainees (1259)

TABLE 16. FAC FOR OTHER CENTRALIZED SUPPLY FUNCTIONS

Air Force Aerospace Fuels (1261) - AFLC
Special Weapons (1262) - AFLC
Air Munitions (1263) - AFLC
Cryptologic Logistics Management (1264) - USAFSS
Special Logistics Management Activities (1269)
Supply and Services Staff (1220) - Numbered Air
Forces and higher
Materiel Management Staff - Headquarters, AFLC

**TABLE 17. FAC FOR BASE ACTIVITIES MAPPED TO
CENTRAL SUPPLY AND TRANSPORTATION**

Unit Level Supply (4010)

Base Supply (41XX)

Command and Unit Admin. (411X)

Materiel Facilities (412X) - Materiel Inspection, Receiving, Storage and Issue, War Readiness Materiel/Mobility, Self-Service Store, Pick-up and Delivery

Supply Management and Procedures (412X) - Inventory, Training Systems, Systems Procedures and Standardization, Funds Management, Supply Administration

Supplies Management (414X) - Maintenance Support, Stock Control, Special Support

Equipment Management (415X) - Operational Support, Equipment Control

Item Accounting (416X) - ADPE/PCAM, Item Research, Document Control

Fuels Management (417X) - Quality Control and Inspection - POL, Storage, Distribution, LOX and Propellants, Accounting and Admin., Gasoline Dispensing

Engine Management (4180)

Base Transportation (42XX)

Traffic Management (422X) - Railroad Rolling Stock, Utility Watercraft, Base Air Terminals, Packing and Crating

Aerial Port Operations (4230)

Procurement and Production Staff (125X)

Base Procurement (1251) - Includes Contract Administration

Munitions Maintenance Squadron (25XX)

Munitions Storage and Handling (2522)

Inspection - Munitions (2525)

Tables 13 to 17 demonstrate the depth of detail available in the CMDB.² These can, of course, be aggregated to any desired level. Since CMDB also includes the PE and unit designation in the basic record, appropriately aggregated manpower data can be displayed by MFP.

In summary, base level supply oriented activities are, for the most part, aggregated with other functions in the Base Operations PE. It is therefore not possible to obtain LRA information directly from the F&FP. Manpower Authorizations, both military and civilian, are available from the CMDB in great detail. Careful selection of FACs will allow collection of base level information consistent with centralized function definition.

Centralized Supply functions are represented by individual PEs. It is, therefore, possible to obtain detailed Resource Category information (to the EEIC level if desired) from the F&FP data base. In addition, the CMDB can provide more detailed information on manpower authorizations.

Transportation

The transportation function included in LRA has been defined to include: base transportation services, movement of people and personal property, transport of cargo, and non-IF funded airlift. Traffic management and terminal operations were included in Supply Depot/Operations above.

Base transportation, like supply, is embedded in the Base Operations PE so that no information is available from the F&FP. Only Second Destination Transportation is represented by a single PE, 78010. Total Permanent Change of Station Travel (PCS) is shown under PE 81610, but the only detail available is limited to: (1) PCS Travel, (2) dislocation allowance, and (3) transportation of household goods.

The F&FP data base may, however, provide some detailed data of interest. The EEICs programmed include:

- Temporary Duty (TDY) by ASIF and other modes-unit rotation, USAF exercises, per diem

²Definitions of the categories are included in AFM 300-4.

- Rent of Passenger Vehicles
- Transportation of things - ASIF Unit rotation, ASIF JCS Exercises, ASIF USAF Exercises, ASIF Other, MSC, Commercial Air, Commercial Surface, LOGAIR and port handling costs

These EEICs are programmed for each applicable PE. It is therefore feasible to display the consumption of purchased transportation resources as represented by the EEICs for each MFP. The topics covered for all MFP except MFP 7 and 8 would include:

- Transportation of People and Personal Property

TDY - Unit Rotation-ASIF
 USAF Exercises-ASIF
 Other-ASIF
 Total-ASIF
 Unit Rotation-Other
 USAF Exercises-Other
 Other
 Total-Other than ASIF
 TDY-Per Diem
 Rental of Passenger Cars
 Transportation of Things
 ASIF - Unit Rotation

- USAF Exercises
- JCS Exercises
- Other
- Total ASIF

 Commercial Air
 Commercial Surface
 LOGAIR
 Port Charges
 Total Other than ASIF
 Total Transportation

These headings would also apply to MFP 7 and 8 except that Second Destination Transportation would be added to MFP 7 and PCS to MFP 8. Second Destination Transportation could be broken down, as appropriate, into the following elements: (1) ASIF, (2) MSC, and (3) Commercial Air, Commercial Surface, LOGAIR and Port Handling charges. The F&FP data bank has only the elements shown above for PCS, that is, PCS travel movement of household goods and dislocation allowance all funded through the Military Personnel Appropriation. No detail of how these funds were consumed (ASIF, MSC, Commercial, etc.) is available.

If desirable, personnel involved in providing transportation services can be displayed from CMDB information. Base level FACs available include:

- 420X-Command and Unit Administration
- 421X-Vehicle Operations
- 424X-Vehicle Maintenance

where traffic management and terminal operations are included with base supply. If desired, Transportation Staff personnel above base level can be displayed by including FAC 1240, Transportation Staff.

Non-IF funded airlift include funds for the MAC run C-5, C-141, and C-130 aircraft, operation of MAC bases, and other costs in MFP 4 that are not reimbursed by revenues from industrial fund activities. These are identified by program element in MFP 4. To avoid double counting, funds for equipment maintenance, base supply, transportation, and operation of MAC bases will be added to other logistics functional cost totals and shown as non-additive entries under the non-IF funded airlift category.

In summary, some O&M funded transportation resources can be displayed by MFP from the F&FP data base by controlling on selected EEICs. Centrally managed Second Destination Transportation is a separate PE so the relatively clean data by EEIC is available. PCS travel, which actually funds a significant portion of ASIF, is also a separate PE, but detail available does not indicate how the funds provided in the Military Personnel Appropriation are actually consumed.

Maintenance

It is desirable to identify as many maintenance resources to weapon systems as possible. Despite the problems associated with accumulating data on actual expenses, it seems possible to achieve reasonable identity of programmed resources (except depot maintenance) from existing sources. The major LRA resource categories for maintenance include: (1) materiel and equipment investment, (2) military personnel, (3) civilian personnel, (4) spares AFSF, (5) contract maintenance and (6) depot maintenance.

As discussed previously, the F&FP data base can provide good weapon system visibility for materiel and equipment investment.³ A problem may exist for PEs containing a mix of aircraft such as MFP 2 Training or MFP 2 Command. The information displayed for these composite PEs shows one entry for a cost element like "Common AGE." Conversations with USAF personnel indicate, however, that the entry is built up by aircraft even though one total for the PE is retained.

Maintenance materiel funded through the O&M Appropriation presents difficulties. In general, however, cost per flying hour factors are used by MDS to generate three EEICs of major importance. These are: (1) System Support Stock Fund, (2) General Support Stock Fund, and (3) Exchange Equipment, Systems Support Stock Fund. These factors are used even for composite PEs which include several aircraft. Locally procured materiels and contract maintenance is programmed by PE, but there is no clear method to achieve end item identification for composite PEs.

The CMDB contains methods for identifying maintenance personnel to PEs and to specific Air Force organizations. In summary form, FACs identifying maintenance personnel by function are shown on Table 18.

Military and civilian personnel in these categories can be identified to end items (aircraft, missile, communication systems, radars and other Force RICs) provided that the end items can be identified to a PE or organization identifier. The PE identification will not necessarily be sufficient in the case of composite PE. However, since the organization identifiers go down to detachment level, end item—organization mapping is possible, but initially tedious.

The best display methods are by no means self evident. Different types of displays may be appropriate for different types of systems on different MFP. For prime aircraft

³This is true for aircraft and missile systems. It is not as clear that end item identification can be accomplished for communications or intelligence systems. LMI did test PE 111316, SAC Communication which shows Other Procurement Funded Electronic and Communications equipment.

TABLE 18. FACS FOR MATERIEL MAINTENANCE FUNCTIONS
BASE LEVEL ACTIVITIES

Chief of Maintenance (21XX) - Quality Control, Maintenance Control, Training Control, Technical Engineering

Organizational Maintenance (22XX) - Flight Line, Inspection, Support Equipment, Alert Force, Base Flight/Transient Aircraft

Field Maintenance (23XX) - Fabrication, Propulsion, Aerospace Systems, AGE

Avionics Maintenance (24XX) - COMM/NAV, Mission Systems, Post Attack Command and Control Systems, Precision Measurement Equipment Lab, Avionics Maintenance Shop, Airborne Missile Maintenance

Munitions Maintenance (25XX) - Services, Maintenance and Storage, Explosive Ordnance Disposal, SRAM (SAC only), Equipment Maintenance, Preload

Ground Communications - Electronics - Meteorological (CEM) Equipment Maintenance (26XX) - CEM - Chief of Maintenance, Flight Facilities - Non-Radar, Technical Control, Ground Radar (includes Flight Facilities), Ground Communications Equipment, AGE-CEM, Computer Systems Maintenance (Command and Control Systems), Meteorological Equipment, Other Ground CEM Systems

Ground Launch Missile Maintenance (28XX) - Site, Field Maintenance (Titan & MM), Real Property Installed Equipment, Vehicle and Equipment Control, Organizational Maintenance (MM), Missile Systems (Other).

Ground Support Equipment (29XX)

Synthetic Trainers (3130) - Operators and maintenance personnel associated with synthetic trainers often assigned to Avionics Maintenance Squadron

systems, such as F-4 or B-52 Squadrons, a unit or organization control is recommended. Aircraft in a Tactical Fighter Wing may be included in several MFP 2 PEs: F-4 Squadrons, Training and, perhaps, Command. Maintenance personnel are allocated to all such PEs. Since there is no reason to believe that maintenance requirements are materially affected by these somewhat arbitrary assignments, all maintenance resources should be displayed as supporting the prime aircraft (i.e., F-4).

Not all aircraft maintenance personnel are assigned to the host maintenance squadrons even when tenant organizations receive at least some maintenance support. Aerospace Rescue and Recovery Detachments, for example, have limited maintenance

capability. A Fighter-Interceptor Squadron (Air Defense Command) as a tenant on a SAC or TAC base will generally have, at a minimum, organic maintenance capability for system peculiar support. Such personnel can be identified to their specific organizations.

Communication systems maintenance presents a different problem. A Communications Squadron can perform a variety of services that are not only assigned to different PEs, but also to different MFPs. In general, a typical COMM SQ at a base will provide: (1) base communications support, that is telephone and non-tactical radio, (2) air traffic control (tower, GCA, and, perhaps, center), and (3) tactical communications including crypto. Thus, a PE control is advisable.

Resources supported by maintenance materiel and manpower can be assembled into meaningful displays. Table 19 illustrates a typical aircraft display showing: (1) UE aircraft and flying hours from all PEs, (2) other aircraft supported by the prime UE (T-33s supported by F-4 Squadrons, 27128), (3) a summary of maintenance manpower drawn from the CMDB, and (4) a maintenance cost summary drawn from the F&FP. All information pertains to base level activities except the entry of aircraft depot maintenance. The DM entry covers airframe only and excludes engines, exchangeables and accessories required by the F-4.

Table 20 illustrates a display for missile squadrons which contains information equivalent to that covered for aircraft. Table 21 shows the maintenance information available for a hypothetical composite PE in MFP 3.

In summary, by combining sources, reasonable displays covering base level maintenance activities can be prepared. Since the F&FP programs maintenance materiel costs (both investment and stock fund) by system, it is possible to reaggregate aircraft in MFP 1 and 2 into single system displays. It may not, however, be possible to obtain reasonable representations of base procured maintenance materiel or contract maintenance performed at base levels.

TABLE 19. AIRCRAFT MAINTENANCE DISPLAY

(F-4 Example)

<u>Program Years</u>	
Aircraft Summary	
F-4 SQ (27128)	
Training (27597)	
Command (27598)	
Total	
Flying Hour Summary	
F-4 SQ	
Training	
Command	
Total	
Other Aircraft Supported	
Type/PE: T-33 (27XXX)	
Flying Hours	
Manpower Summary	
Chief of Maintenance	
OFF	
EM	
CIV	
Organizational	
OFF	
EM	
CIV	
Intermediate	
OFF	
EM	
CIV	
Total, Base Level	
OFF	
EM	
CIV	
Cost Summary	
Materiel & Equip. Investment	
Initial Spares	
Replenishment Spares	
Mod Kits - Class IV	
- Class V	
Peculiar Support Equip.	
Common AGE	
War Reserve Material	
Total	
Stock Fund Spares	
Sys Sup Div	
Gen Sup Div	
Exch Eq - SSD	
Total	
Military Personnel	
Chief on Maint	
Org Maint	
Intermediate	
Total Base Level	
Total Base Level Cost	
Investment	
Operations	
Stock Fund	
Civilian Pers	
Mil Pers	
Total Operations	
Total Base Maint Cost	
Depot Maintenance IF	
F-4 (Air Frame)	
T-33 (Air Frame)	

Note: WRM and DMIF are non-add entries.

TABLE 20. MISSILE MAINTENANCE DISPLAY

	<u>Program Years</u>
<u>RIC Supported</u>	
UE Missiles	
Launchers	
Aircraft (By Type)	
UH-1 - No	
- Flying Hrs	
<u>Maintenance Manpower Summary</u>	
Missile	
Organizational	
OFF	
EM	
CIV	
Intermediate	
OFF	
EM	
CIV	
Site, Vehicle & Equip	
OFF	
EM	
CIV	
Aircraft	
Organizational	
OFF	
EM	
CIV	
Intermediate	
OFF	
EM	
CIV	
Total Missile Sq	
OFF	
EM	
CIV	
<u>Cost Summary</u>	
Materiel & Equip Investment (Appropriate Elements)	
Stock Fund Material	
Missile	
Aircraft	
Military Personnel	
Missile Maint	
Aircraft Maint	
Base Level Total	
Investment	
Operations	
Stock Fund	
Civilian Pers	
Military Pers	
Total	

TABLE 21. HYPOTHETICAL COMMUNICATIONS/INTELLIGENCE PE

	<u>Program Years</u>
<u>Equipment Supported</u>	
Aircraft	
RC-135 - No	
- Flying Hours	
Radar	
Comm System XXX	
Comm Sq/Flts	
<u>Maintenance Manpower Summary</u>	
Aircraft	
Organization	
OFF	
EM	
CIV	
Intermediate	
OFF	
EM	
CIV	
Comm/Electronics	
Chief of CEM Maint	
OFF	
EM	
CIV	
Ground Radar	
OFF	
EM	
CIV	
Other Ground CEM	
OFF	
EM	
CIV	
Total	
OFF	
EM	
CIV	
<u>Maintenance Cost Summary</u>	
Materiel & Equipment Investment	
Aircraft by Category	
CEM by Category	
Stock Fund Materiel	
Aircraft	
Sys Sup Div	
Gen Sup Div	
Exch Equip, SSD	
CEM	
Sys Sup Div	
Gen Sup Div	
Exch Equip, SSD	
Total SF Materiel	
Military Personnel	
Aircraft	
CEM	
Total	
Base Level Total	
Investment	
Operations	
SF Materiel	
Military Pers	
Civilian Pers	
Total Operations	
Total Base	

Base Operations

Base Operations, as defined for the LRA, includes all activities affected by basing decisions. Two categories are suggested: (1) Real Property Maintenance Activities (RPMA), and (2) Other Base Operations (OBO). The first of these, RPMA, corresponds to the present FYDP PEs coded XXX94. The second, OBO, includes activities covered by a variety of PEs: XXX96, Base Operations; XXX95, Base Communications; Base Hospitals in MFP 8; and, perhaps, certain operation support activities such as base weather, air traffic control and aerospace rescue and recovery.

Better information on base operation functions is required. The present FYDP PEs cited above show one aggregated figure covering logistics, personnel and operational support activities. In addition, the resources shown include elements of the host and all or part of tenant organizations. The PE XXX96 displays therefore furnish little information of value to logistics analyses. Further, base closing decisions affect such a variety of PEs that the impact of such a decision is virtually impossible to trace.

Although existing data sources will not give better data by funding category, it is possible to generate a considerable body of useful information. The following tabulations, based primarily on an analysis of SAC and TAC bases, is intended to portray the types of information available and are not necessarily suggested minimum information requirements.

The logistics activities included in the LRA categories of base operations are a function of base population and systems housed at the individual bases. Table 22 shows the types of information available concerning these factors. Population supported is available in the Manpower and Organization Document (PM) as are organizations supported. Organizations could be limited to major units or could be detailed enough to include Audit Agency, Management Engineering or other small teams. No single source for accumulating RICs by base has been identified. Reports STD 116 and STD 117A generated from the F&FP data base show RICs by PE while the Base, Units and Priorities

TABLE 22. BASE POPULATION DATA

Number of Bases	
Base Population	
Air Force	
	Assigned Students Transients
Army	
Navy	
Civilian	
Total	
RIC and Organizations Supported	
Aircraft RIC (No. in each)	
Other RIC (No. in each)	
Organizations	
Wings	
Aircraft Squadrons (Host)	
Aircraft Squadrons (Tenant)	
COMM Sq. and Flts	
ARR Det	
Weather Det	
Other	

Document (PD) shows major RICs by base. The table assumes, however, that complete RIC by base data is available. Note that separate tables for U.S. and overseas facilities can be prepared if desirable.

The CMDB can provide very detailed information for manpower. Twelve major categories are shown on Table 23. These could be grouped to show:

- Civil Engineering Staff Activities
- Unit Admin
- Maintenance and Repair
- Minor Construction
- Electrical Production
- Other Engineering Support

TABLE 23. FAC FOR RPMA

Civil Engineering (440X) - Unit Administration and Management, Industrial Engineering, Family Housing Management, Red House

Civil Engineering Programs (441X) - Program Development, CE Planning, Real Estate Management, CE Cost Accounting, Materiel Control

Engineering & Construction (442X) - Technical and Design, Construction Management, Fire Protection and Crash Rescue, Fire Operations, Fire Technical Services

CE Operations & Maintenance (443X) - Work Control, Family Housing Maintenance - Supervision, Medical Facility Maintenance - Supervision, CE Missile Support

Pavement & Grounds (444X) - CE Equipment Operations, Pavements, Grounds Maintenance, Railroads Maintenance, Range Maintenance, Materiel Resources

Structures (445X) - Structural Maintenance, Protective Coating, Plumbing, Metal Working, Masonry, Saw Mill

Mechanical CE (446X) - Refrigeration and Air Conditioning, Liquid Fuels Systems Maintenance, Heating Systems

Electrical-CE (447X) - Interior Electrical, Exterior Electrical

Electric Power Production (4480)

Sanitation (449X) - Water and Waste, Custodial Services, Entomology, Refuse Collection and Disposal

Engineering and Installation (493X) - Maintenance and Installation, Systems and Facility Engineering

Civilian Engineering Staff (17XX) (Air Divisions or higher) - Facilities Programs, Engineering and Construction, Operations and Maintenance, Resource Planning Staff, CE Special Activities

Detailed breakdown by officers, enlisted, and civilians is available and estimates of military and civilian pay could be prepared. Separate reports for U.S. and overseas facilities could also be developed.

Complete funding detail for the XXX94 PEs could be displayed. The CE oriented EEIC programmed for O&M include:

- Maintenance M Projects
- Repair R Projects
- Custodial Services

- Engineering Services
- Other Civil Engineering Services
- Contract Engineering Technical Services
- Fuels for Utilities

Of course, O&M funded could also be displayed by OSD Element of Expense.

The second LRA category for Base Operations, OBO, is designed to include all logistics, operational support and personnel support activities conducted at a base except RMPA. A detailed, but by no means exhaustive, listing of activities is shown on Table 24.

TABLE 24. FACS FOR OTHER BASE OPERATIONS ACTIVITIES

<u>Operational Support</u>
Rescue and Recovery*
Base Weather*
Air Traffic Control*
Office of Special Investigations
ATC Training Units*
Other Special Teams
<u>Base Services</u>
Communications*
Comptroller
Admin.
Personnel
Special Services
Commissary
Food Services
Housing
Linen Exchange
Base Operations and Training
Graphic Arts
Chaplain
Base Hospital
<u>Logistics Activities</u>
Base Supply
Base Transportation*
Base Procurement
Clothing Sales
Base Security
Base Flight/Transient Aircraft Maintenance
Precision Measurement Equipment Lab
Simulator Operations and Maintenance

*These elements can be split to show operations and maintenance.

Each entry is identifiable through one or more FACs. Detailed breakdowns by officer, enlisted and civilian categories are possible along with separate data for U.S. and overseas facilities. Estimates of military and civilian pay can be derived.

It seems clear that the logistics analysts are not interested in such detailed information on OBO manpower. Higher levels of aggregation such as those suggested on Table 6 are easily obtained.

Other Logistics Functions

Several other categories, War Readiness Materiel, Industrial Preparedness, Headquarters of Major Logistics Bases, Family Housing-Defense, Laundries, Printing Plants, and Mothballing, are suggested for inclusion in the LRA. With the exception of the additional detail for WRM discussed under the Maintenance Function above, detail beyond that present in the FYDP has not been examined.

Summary of Additional Data Available

While far from ideal information on resource consumption can be obtained, significant improvements are possible. Special annexes to the FYDP are available for RDT&E and Military Construction. Those, coupled with the present PE display of these appropriations, are considered adequate for analysis purposes. Reasonably good displays of Procurement Funds by system can be obtained from the Procurement Annex and the F&FP data base. Some problems may exist for such entries as Common AGE or certain War Readiness Materiel when composite PEs are involved although it is possible that these PEs are programmed by system. Extremely detailed manpower, military and civilian displays by organization and function are available from the CMDB and/or the PM Document. This ability allows for consolidated displays and centrally managed supply and transportation activities on a common basis. While the CMDB and PM may not agree precisely with the FYDP, the differences appear to be small and reconcilable. Major portions, but not all of O&M funded expense can be identified to systems. Certain Force RICs can be displayed by PE, if desired, or accumulated for display with other

information. If done, such a display will show systems supported for such logistics categories as Maintenance and Base Operations.

In terms of total funding using the FY77 budget as an example, the following TOA categories can be identified to appropriate categories:

- Investment Appropriations

RDT&E (annex)	\$ 3.90 billion
Military Construction (annex)	0.80
Aircraft Procurement (F&FP & annex)	6.40
Missile Procurement (F&FP & annex)	1.60
Other Procurement (F&FP & annex)	2.40
	<u>\$15.10</u>

- Operations

Military Personnel (CMDB)	7.20
O&M	
	<u>3.80</u>
Civilian Personnel (CMDB)	
Fuel (F&FP)	<u>1.65</u>
Total Identified	\$27.75

- Not Identified

Other O&M	2.75
Reserve and Guard (not investigated)	1.50
Stock Fund Increase (not investigated)	<u>0.10</u>
Total Not Identified	\$ 4.35
FY77 Budget	\$32.10

Note, however, that stock funded maintenance materiel is programmed by aircraft system and can, therefore, be identified. Thus, a minimum of 86 percent of the FY77 budget could be identified to useful categories using existing information.

IMPROVEMENTS THROUGH PPB REVISIONS

While significant improvements in logistics resource information displays can be generated from existing data, the results fall somewhat short of the goals established for a LRA. Theoretically simple changes in USAF information flows could provide a historical basis for PPB changes to fill existing gaps. If implemented, the resulting system would

provide reasonable identification of relevant logistics resources, by function, to force units supported and allow aggregation as resources expended by specific logistic function across force units and programs.

The procedures required include: (1) identifying sources of historical information, (2) aggregating or reaggregating the source information into the LIE structure, (3) developing methods for predicting costs for budget year and beyond, and (4) developing methods for producing program data in the LIE structure. This report concentrates on the first three steps. The fourth, developing program data for each LIE, is dependent on the final LIE structure, and its difficulty cannot be assessed with precision. Potential problems and alternative approaches will, however, be discussed.

Establishing a Historical Data Base

One data base, which disaggregates PEs by function and OSD Elements of Expense, is already available to the Air Staff and to OSD on request. This resulted from DoDI 7220.20 which required the Services to maintain the capability to report expense data by PE in thirteen Functional Categories. Since the instruction was effective in 1968, several years of data should be available from the AF Finance Center.

Although separate FCs are available for several logistics functions: supply, maintenance, maintenance and RMPA, the system is not entirely adequate. Other logistics functions, transportation, security, non-IF laundry and dry cleaning and non-reimbursed support to tenants, are embedded in the category Base Services. In addition, LMI does not know of any source of FC detail at less than PE aggregation. Thus, although useful, the FC data known to be available has limitations.

FC data is available on a current basis at base and Major Command level. Expenses are accumulated to FCs through a mapping of basic CC/CA data to FC (see Appendix C). This suggests that one method of creating a LRA data base consists of revisions of the FC structure along with appropriate changes in the CC/CA to FC matching techniques. Depending on OSD requirements, several new FCs would be required to isolate the

logistics functions now included in the Base Services category. If this additional information were required for OSD purposes only, it is quite possible that the necessary changes could be accomplished at Command level with no changes in base level accounting systems.

The FC reporting capability is required for all PEs and thus is available for the centrally managed activities included in the MFP 7. The impacts of possible FC changes as a means for acquiring historical data for these functions has not been examined in detail. The existing systems discussed in Chapter II provide sufficient information.

As an alternative to FC modification, base level CC/CA data can be mapped directly to the LIE structure. It is probable that this could be done at Command level and would perhaps provide a more precise match of source data to LIEs than FC changes. LMI has not determined how long the base level detail by CC/CA and EEIC is retained by Commands.

It is clear information exists in various data systems to accumulate sufficient historical data to serve as a basis for supporting the LIE structure developed in this report. Very detailed logistic function and subfunction categories can be supported. Weapon system identification would not be ideal. However, such identification is appropriate only for the maintenance function. It appears that maintenance materiel costs and manpower authorizations can be identified to systems with reasonable accuracy. Therefore, historical data is not regarded as a key constraint to LRA development.

Predicting LIEs for Program Years

No new predictive techniques are likely to be needed for developing cost data for future years. Almost any conceivable resource category included in a LIE is presently part of the USAF budgeting procedure, the F&FP, or both. The O&M Appropriation presents the only real problem since the various FYDP annexes and the CMDB provide exhaustive visibility to other appropriations as discussed earlier. Since O&M is programmed by EEIC, a level of detail much more refined than that required by OSD, it is safe to assume that methods for predicting resource categories exist.

The functional categories and, perhaps, the program categories for which resource predictions will be required will, however, change. The Base Operation PEs provide a good example of the problems. Expenses for Base Operations are predicted in detail. If the PE is disaggregated to show the embedded logistics functions as separate entities, the same expense elements must be predicted for supply, transportation, transient aircraft maintenance, precision measurement lab, security, and all other classifications.⁴ LMI did not, with the exception of aircraft related EEICs, examine the present methods used to predict future year expenses by EEIC. The disaggregation problem cannot, however, be considered trivial unless some simple technique to allocate total PE cost to its components were adapted. Since the data appears to exist to develop reasonable cost determinants, such allocations should be avoided. Thus, although the work required to develop the new predictive techniques required can be regarded as straightforward, the costs and resources required to accomplish the task could be extensive because of volume considerations.

Programming Implications

There are two alternatives for the actual preparation of the cost information by LIE: (1) incorporate the new requirement in the F&FP data system, or (2) develop an independent reporting system. The first, which has the advantage of insuring a consistent set of programmed costs covering all functions, is available to OSD. It is in keeping with the methods used to produce the Procurement, R&D and Telecommunications Annexes. The second approach offers a tailor-made system unencumbered with extraneous materiel or constraints, perhaps at the expense of consistency. The MILCON Annex is prepared outside of the F&FP data base.

Imposing new data requirements on the F&FP system would probably overload a system that already taxes data processing capability. Consider the following factors. The

⁴Since Base Operations in the FYDP also include investment appropriations, predictions of those costs for the disaggregated structure will be required.

Air Force has over 500 active PEs and projects, an appropriate selection drawn from about 350 resource categories (about 150 for O&M alone) for each of five years. F&FP computer runs, if complex changes are involved, can take six to eight hours of machine time. Adding new logistics functional categories would increase processing volume substantially—in theory by a factor representing the number of categories added. The program to convert the data center computer from a CDC 600 series to a 6000 series would help but would not solve these problems. If present practices continue, incorporating a new LIE structure in the F&FP data base would present imposing problems.

Separate processing of LIE information would not present a major computer capacity problem. While entirely feasible and perhaps preferable, this alternative would require creation of a new information system, require software development and require the assignment of new staff responsibilities.

Summary

The development of an LRA capable of meeting the general goals established by OSD in initiating this research is feasible from the point of view that the historical data exists and means for producing LIEs for program years can be developed. The practicality of development depends, so far as cost is concerned, on the manpower and data processing resources required to reaggregate basic CC/CA data, to develop new programming factors, and to prepare inputs and process the LRA once it is structured. It seems clear that superimposing a new LRA requirement on the existing PPB preparation system would cause major problems if present PPB preparation practices are continued. A system outside the present F&FP structure might, in the long run, be preferable. Program related information requirements could, for example, be integrated with the ongoing O&S cost systems which would then provide needed LRA data base and improve both the O&S cost information required for DSARC and the cost inputs used for F&FP preparation.

STATUS REPORT

At this point in time, it is possible to report that:

- Various data systems contain historical data that would support a LRA of the type described in this report.
- Considerable improvement in logistics information available to OSD can be achieved by reaggregating program information not normally forwarded to OSD. The results would not fully meet study goals, but would identify about 80 percent of logistics costs to the various logistics functions.
- Under present conditions, adding logistics information requirements to the F&FP preparation process is constrained more by input preparation and data processing problems than by data availability problems.
- Preparation of LRA information outside the PPB structure appears to be preferred in terms of practicality. Incorporating PPB information requirements with ongoing O&S cost work could provide a synergistic opportunity.

The intent of this report was to present enough theoretical and substantive material to allow OSD logistics analysts to evaluate the LRA concept. The detail included should assist in determining both minimum data requirements for each logistics function and the desirability of static displays or a LIE data base. While recognizing that implementation problems and costs are an important consideration in both determinations, these could only be discussed, not quantified at this time. If, after review, the LRA concept seems promising, the research outlined in the next chapter is recommended.

IV. ADDITIONAL RESEARCH REQUIRED

This chapter outlines the research required to develop firm specifications for a LRA from the alternatives discussed in Chapter III. Additional work in four major areas is recommended.

Review and Revise the LRA Structure. Work in this area will involve an analysis of user requirements to establish limits on data requirements. The functional managers in OSD(I&L) and USAF(I&L) should evaluate the proposed structure and propose alternatives if the structure is not adequate for PPB applications.

Field Work. Field work is needed to better assess the capabilities and limitations of existing data systems and to define, in some detail, the content of each logistics information element. Detailed descriptions are needed for comparing LIEs across service lines, for example. Inventory Control Points is a very broad category and it is not clear that the three services are including funds for similar resources, organizations, and subfunctions in this category.

The sub-tasks that would be performed at each organization are presented below.

AFLC

- Investigate and describe the requirements development process (planning and budgeting) for centrally funded logistics resources

Explore AFLC data systems and reports and identify information elements relevant to the LRA

Describe the flow of relevant information from ALCs to AFLC to HQ USAF

ALC

- Describe in detail the organizations and functions at an ALC

Display the distribution of resources at an ALC to organizations, functions, and program elements

Investigate and describe the requirements development process at an ALC (especially that used by item and system managers)

Explore ALC data systems and reports and identify information elements relevant to the LRA

Major Commands

- TAC, SAC, MAC, USAFE or PACAF

Investigate and describe the requirements development process used at Major Command level with partial focus on the manpower requirements development process

Review the logic and procedures used for assigning manpower to program elements

Explore Major Command level data systems and reports and identify information elements relevant to the LRA

Describe the flow of relevant information from air bases to Major Commands to Headquarters USAF

Identify any command peculiar practices that have an effect on the problem of identifying logistics resources to functions and weapon systems

Air Bases

- Describe in detail the organizations and functions at several air bases including some with host and tenant organizations and multiple weapon systems

Display the distribution of resources at the air bases to organizations, functions, and program elements

Analyze base accounting and budgeting reports especially to assess the effects of host-tenant cost accounting and budgeting, the use of the base-wide expense accounts, and weapon system costing on the resource identification problems of the LRA

Explore base level data systems and reports and identify information elements relevant to the LRA

Air Force Accounting
and Finance Center

- Explore the headquarters USAF accounting data system and reports and identify information elements relevant to the LRA

Evaluate the accounting data available on operations costs by program element and DoD functional account to determine its usefulness to the LRA

Data Processing Requirements. The data processing requirements imposed by the proposed LIE structure and possible alternative structures should be evaluated. The OSD and USAF program data bases will increase in size, perhaps substantially, depending on the level of detail incorporated in the LIE data base. Processing of the F&FP data base already uses the manpower and computer capacity available for that purpose, and any size increase would result in additional processing costs. Also, additional data processing may be required at the USAF Major Command and base level although changes to base level data reporting and processing is not anticipated.

Implementation Plan. After the final structure is presented, a detailed implementation plan should be developed. This plan should specify all data flows, staff responsibilities for preparing and processing program data, performance schedules, and the allocation of manpower and computer capacities needed to implement the LRA. The development of the USAF part of this plan should be accomplished by the Air Staff responsible for policy and procedures used in preparing the F&FP data base augmented by other affected staff elements as may be required.

APPENDIX A

LOGISTICS RESOURCE ANNEX STRUCTURES: DEFINITIONS AND EXAMPLES

The Logistics Resource Annex (LRA) and its support data base can be described in terms of its components. These are: resource categories, program categories, and functional categories. An information element is defined as the detailed entry showing the magnitude of a specified resource devoted to a particular logistic function in a given program category. Table A-1 displays schematically how these categories fit together. An X on the table represents a resource category or subcategory. This appendix will define the categories and illustrate their content.

The LRA has been structured to support the programming and planning system and, as such, should be compatible with the FYDP. To be practical the annex should require a minimum of new data systems (probably none at the base level), but could require changes in the aggregation of data at higher command. The categories should be defined so that information requirements are consistent with Air Force programming methods and so that a minimum of proration of resources is required.

The LRA is thus designed to support decision making within the DoD PPB system by displaying the logistics resources relevant to the particular decision. Relevant resources may, of course, change as the type of decision changes. Consideration of a maintenance policy decision will, for instance, impact a different aggregation of resource than would a consideration of base closures. For this reason, LMI thinks of the LRA as a data base which can be manipulated to produce a display of relevant resources rather than a static set of tabular reports. While there are serious tradeoff considerations between detail required to accomplish the data base and cost and practicality of implementation, this approach is calculated to provide maximum utility to OSD(I&L) from an LRA.

As a programming system, the LRA will contain Obligatorial Authority (TOA) and authorized strength data. It will, therefore, display resources committed to particular

TABLE A-1. RESOURCE/FUNCTION/PROGRAM CATEGORIES

Programs	Functions	Mainte-nance	Supply	Transpor-tation	Base Opera-tions	War Reserve Stock	Industrial Pre-paredness
1. Strategic Forces		X	X	X	X	X	
B-52		X				X	
FB-111		X				X	
•		X				X	
•		X				X	
2. GP Forces		X	X	X	X	X	
A-7		X				X	
F-4		X				X	
•		X				X	
•		X				X	
3. Intell & Comm		X	X	X	X	X	
AUTODIN		X				X	
COMSTAS		X				X	
•		X				X	
•		X				X	
4. Airlift/Sealift		X	X	X	X	X	
C-5		X				X	
C-141		X				X	
•		X				X	
•		X				X	
7. Central Supply & Maintenance							X
•							
•							
•							

functions, that is, the authorized strength of the Organizational Maintenance Squadron. It will not display the manpower (or man hours) actually consumed by the squadron to maintain assigned aircraft. Similarly, the LRA will display TOA for replenishment spares each year but will not show the cost of spares actually procured. Thus, although the LRA is designed to provide a significant improvement in information available on planned resource requirements, it will not, necessarily, provide new information on actual resource flows.

FUNCTIONAL CATEGORIES

LMI has identified at least 12 categories of logistics functions for inclusion in the LRA as shown on Table A-2. There is, of course, some overlap in these functions. Maintenance organizations consume transportation resources while Base Operations can imply non-real property maintenance activities associated with base-wide support.

TABLE A-2. FUNCTIONAL CATEGORIES

- MAINTENANCE
- TRANSPORTATION
- SUPPLY
- BASE OPERATIONS
- WAR RESERVE STOCKS
- INDUSTRIAL PREPAREDNESS
- HQTRS, MAJOR LOGISTICS BASES
- FAMILY HOUSING
- LAUNDRIES
- PRINTING PLANTS
- MOTHBALLING
- OTHER

Note that Military Construction (MILCON) is not included on the list of logistics functions. While MILCON is generally believed to be a logistics activity there are two factors which suggest that MILCON not be included as a logistics function in the LRA. First, MILCON is an appropriation category which is justified separately and carried to each applicable program element in the FYDP. Second, a MILCON Annex already exists at the OSD level. If this annex is sufficient for management purposes, then there seems to be no need to include the construction function in the LRA.

Several of the functions listed on Table A-2 are funded or partially funded through various Industrial Funds (IF). These include depot maintenance, printing plants, laundries and dry cleaning plants and transportation services provided by MAC and MSC. The IFs are revolving funds where the cost of providing the service is recovered through charges to the user of the services. Two PEs are used in the FYDP to depict IF activity: (1) to indicate the level of resources required to provide the service (generally labeled IF), and (2) to indicate revenues derived from customers. Examples are as follows:

PE 72007 Depot Maintenance IF
PE 72008 Revenues(DMIF)

PE 72033 Printing Plants IF
PE 72034 Revenues (Printing Plants)

PE 72035 Laundries IF
PE 72036 Revenues (Laundries)

Generally speaking, except for work-in-process differences, the paired PE cancel each other, i.e., costs equal revenues. In some cases such as Depot Maintenance, however, the Air Force can obtain maintenance from the other services. Thus, while the PEs labeled IF show the total resources devoted to the particular activity, the actual TOA to provide the revenues is contained in other PE. The TOA for Depot Maintenance is included in the following PEs:

72207 Depot Maintenance (Non-IF)-includes TOA for active forces excluding MAC

57112 Depot Maintenance (National Guard)

57113 Depot Maintenance (Reserve)

Note that depot maintenance for MAC aircraft is included in the basic rates used in the various MAC IF (e.g., PE41118, C-141 SQ IF).

TOA for airlift, laundries, printing plants, etc. is even more widely scattered in the present FYDP structure. Theoretically, every program element could include TOA for these services. This situation presents some problems for the LRA. The present FYDP displays resources required to provide industrially-funded services, but give little or no information on consumption of the services. Where important to category structure and presentations, these IF problems are discussed below. Methods for obtaining information on the consumption of IF services are discussed in Appendices B and C.

Maintenance

The Maintenance Category is defined to include the maintenance management and administration, maintenance of materiel and maintenance engineering support activities. Management and supervision includes unit administration, maintenance control and analysis, materiel control and records-keeping. Maintenance of materiel covers calibration, repair and replacement of unserviceable parts or components, manufacture of parts or components, modifications and/or modernization and rebuild of parts or

components. At base level, this function would include such organizations as the Chief of Maintenance (Wing Staff) and the various maintenance squadrons (Organizational, Field, Avionics, Munitions, and others as appropriate). Depot maintenance would form a separate subcategory. The Maintenance Staff at higher commands could be included at the Major Force Program level if desirable.

The major subcategories suggested for Maintenance are shown on Table A-3. The first item, Materiel and Equipment Investment, needs some clarification. It reflects TOA for maintenance materiel funded through the Aircraft, Missile, or Other Procurement Appropriations. Obviously, the management of these items is a Supply responsibility and the resources associated with managing and accounting for this materiel is included in the Supply Category below. The costs of O&M funded maintenance materiel is included, as appropriate, in the categories of Table A-3. Thus, including investment funded maintenance materiel insures that all materiel costs are in Maintenance and all management of supplies in the Supply Function.

It seems desirable to separate the maintenance of mission equipment from the maintenance of support equipment as shown on the Table. Such a breakdown is theoretically feasible, but its cost may exceed the benefit derived.¹

Three levels of maintenance are included. The first two, Organization and Intermediate, are accomplished at base level. The activities included in each of these subclassifications are shown and defined on Tables A-4 and A-5. The definitions were drawn from the Air Force accounting system for operations and are stated in terms of the accounting building blocks, cost centers. These are discussed in detail in Appendix C. Cost center codes are included on the tables for reference purposes.

Transportation

The Transportation function has been broadly defined to include all resources associated with the movement of people, personal property, and cargo. It, therefore,

¹See Appendices B and C for discussions of possible data sources. The suggested breakdown can only be achieved by reaggregating historical data to develop appropriate programming factors.

TABLE A-3. MAINTENANCE CATEGORIES

Investment Funded Maintenance Materiel

Initial Spares
Replenishment Spares
Peculiar Support Equipment
Common AGE
Modifications - Class IV
 Class V
(War Reserve Materiel)

Maintenance of Mission Equipment

Organization
Intermediate
Depot

Maintenance of Support Equipment

Organization
Intermediate
Depot

Sustaining Engineering Support

departs from the present FYDP structure and includes consideration of some factors not normally thought of as transportation, namely, PCS travel and MAC airlift. The suggested subcategories for transportation are shown on Table A-6.

The broad definition of transportation is not intended to suggest that transportation analyses at the OSD level should be concerned necessarily with PCS policy determination or the strategic and tactical considerations used to size the airlift fleet (MFP4). The OSD transportation analysts may, however, be interested in the peacetime utilization of airlift resources, or more particularly, how other transportation decisions impact on fleet utilization.

PCS travel (including the movement of household goods) uses transportation resources even though funded from the Military Personnel appropriation. While the policies that dictate change of station travel may not be "logistics" in nature, the methods used to accomplish the moves involve not only MAC and MSC, but commercial

TABLE A-4. ELEMENTS OF MISSION EQUIPMENT MAINTENANCE

Organization

- Organization (CC 2200): Accounts for the activities of flight/site periodic, and mobile maintenance. It includes the commander and unit administration when organized as a squadron. This cost center code is not used for a maintenance activity which is organic to a tactical squadron.

Intermediate

- Chief of Maintenance (CC 2000): Accounts for the activities of overall supervision, maintenance control, quality control, training control, maintenance analysis, materiel control, and records and reports administration.

Field Maintenance

Field Maintenance Chief (CC 2300): Accounts for the overall supervision and management of the field maintenance organization. Includes the commander when organized as a squadron, and unit administration.

Fabrication Shop (CC 2310): Accounts for the management, administration, and operation of the Fabrication Shop.

Propulsion Shop (CC 2320): Accounts for the management, administration, and operation of the Propulsion Shop.

Aerospace Systems Shop (CC 2320): Accounts for the management, administration, and operation of the Aerospace Systems Shop.

- Avionics Maintenance (CC 2400): Accounts for the overall supervision and management of avionics maintenance as prescribed in AFM 66-1. Includes the commander when organized as a squadron. Includes administration/training, mobility, maintenance supervision, technical administration, analysis (when authorized) and avionics AGE (when authorized) required for support and control of subfunctions.

transportation, packing and crating and other port operations. The flow of people and materiel funded through PCS, therefore, is an important part of the transportation function.

TABLE A-5. ELEMENTS OF SUPPORT EQUIPMENT MAINTENANCE

Organization

- **Base Flight and Transient Aircraft Maintenance (CC 2250):** Accounts for organizational level activities related to the management of base/transient aircraft.

Intermediate

- **Field Maintenance**

Base Support/Transient Aircraft Maintenance (CC 2350): Accounts for the activities of meeting and parking, servicing, and repairing transient aircraft; and flight line and periodic maintenance of nontactical support aircraft.

Aerospace Ground Equipment Shop (CC 2340): Accounts for the activities relating to the pickup and delivery, inspection and servicing, and repair of aerospace ground equipment, and the management of these activities.

- **Avionics Maintenance**

Precision Measurement Equipment Lab (CC 240X): Accounts for the activities of the precision measurement equipment lab.

AGE Maintenance (CC 240Y): Accounts for activities associated with the maintenance of avionics AGE.

- **Munitions Maintenance Activity (CC 2500):** Accounts for all activities related to munitions maintenance, munitions services, maintenance and storage, and explosive ordnance disposal. (For SAC only—includes maintenance of Short Range Attack Missile (SRAM)).

TABLE A-6. FUNCTIONAL CATEGORY-TRANSPORTATION

- Base Transportation Services	- Cargo
- People & Personal Property	Second Destination
Permanent Change of Station	MAC
MAC	MSC
MSC	Commercial Air
MTMC	Commercial Surface
Commercial	- Airlift (Non-IF)
Other Travel	C-5
MAC	C-141
MSC	C-130
MTMC	Other
Commercial	
Other	

Base Transportation Services, the first category on Table A-7, are defined to include base level transportation activities such as the Transportation Squadron of a Wing along with such base-wide expenses as local drayage. Since many transportation activities are

TABLE A-7. FUNCTIONAL CATEGORY -
BASE OPERATIONS

Real Property Maintenance Activities

- Operation of Utilities
- Maintenance and Repair
- Minor Construction
- Other Engineering Support

Other Base Operations Activities

- (Base Supply)
- (Base Transportation)
- Base Security
- Base Command and Administration
- Base Personnel Services
- Basewide Materiel Maintenance
- Other Base Services
- Base Medical Facilities
- Base Communications

funded through industrial funds, it is possible, in theory, to break down some travel expenses by Program Element detail. Cost elements for IF transportation which could be so displayed include:

TDY - other purposes - ASIF (Personnel)

- unit rotation - ASIF (Personnel)

Transportation - unit rotation - ASIF (Materiel)

- JCS exercises - ASIF (Materiel)

- USAF exercises - ASIF (Materiel)

- Other purposes - ASIF (Materiel)

- MSC

Supply

The Supply Category includes activities associated with the procurement, receipt, storage, issue, and control of materiel, but does not include the value of the materiel itself. The suggested subcategories for this function are as follows:

- Base Supply
- Supply Depot/Operations
- Inventory Control Points
- Procurement Operations

Procurement

Contract Administration

Base Supply includes overall management and administration of base supply; activities related to inspections, receiving, storing, and issuing materiel; the procedural management of supplies and equipment; maintenance support, stock control, and off-base support; item accounting; and base fuel supply management. Base procurement activities, although not organically part of the base supply squadron, can be identified and included in Base Supply for consistency.

Supply Depot/Operations, as defined in DoD Instruction 7220.17, includes the same functions as Base Supply, but has been expanded to include traffic management and terminal operations. These functions are performed by the Transportation Squadron at base level, but can be identified and included in Base Supply for consistency.

Inventory Control Points include activities associated with materiels management while Procurement Operations includes central procurement functions, contract administration, plant representatives, and industrial security.

Base Operations

Base Operations is broadly defined to include all activities impacted by a decision to open or close a base. As shown on Table A-7, these can be grouped under two major headings: (1) Real Property Maintenance Activities, and (2) Other Base Operations

Activities. The broad definition includes some functions often not associated with logistics (Base Personnel Services and Base Medical Facilities).

Real Property Maintenance activities include, at base levels, all facets of the Civil Engineering Group. The subcategories shown are as defined in DoD Instruction 7220.20.

Base Supply and Transportation activities are included as non-add entries in Other Base Operations activities for completeness. Definitions of the other entries are as follows:

- Base Security - air police administration, pass and registration, investigation, traffic, law enforcement, correct and detention.
- Base Command and Administration - non-mission oriented staff functions such as judge advocate, information, ground safety, and comptroller.
- Base Personnel Services - Chaplain, base personnel, and such personnel services as commissary, base exchange, food services, housing service, and linen exchange.
- Base-wide Materiel Maintenance - base/transient aircraft maintenance and precision measurement lab.
- Other Base Services - a miscellaneous category for not otherwise classified base support. This category would include management engineering teams, AF audit teams, special investigation teams, and other similar detachments assigned to most bases.
- Base Medical Facilities - base hospitals, clinics, and dispensaries.
- Base Communications - base telephone and nontactical radio systems, wire communication services, tolls, and other commercial communications.

War Reserve Materiel

WRM includes war consumables and contingency stockpiles. Suggested subcategories are shown on Table A-8. At the present time, WRM is shown, in the aggregate, in the following FYDP Program Elements all of which are limited to MFP-2, General Purpose Forces:

PE 28030 - Procuring and Maintaining ammunition war reserve stockpiles.

PE 28031 - Procuring and maintaining equipment/secondary item WR stockpiles.

PE 28032 - Procurement cost of stock funded war reserves of: (1) USAF managed items of prepositioned war reserve stock (PWRS) and other war reserve stocks (OWRS), and (2) DSA managed items held as USAF PWRS. This PE is a non-add entry to TOA.

PE 28033 - Procurement cost of OWRS held and managed by DSA. This PE is a non-add entry to TOA.

**TABLE A-8. FUNCTIONAL CATEGORY -
WAR RESERVE MATERIEL**

Procurement Fund WRM Contingency Stockpiles

- Common AGE
- Replenishment Spares
- War Consumables

Stock Funded WRM Stockpiles

- Prepositioned

D-P (Systems Support Division)
Chaff (Systems Support Division)
WRS Kits (General Support Division)
Ground/Utility Fuels (General Support Division)
Medical Supplies (Medical and Dental Division)

- Other

D-P (Systems Support Division)
Chaff (Systems Support Division)

Industrial Preparedness

Industrial preparedness is presently shown as PE 78011 in the FYDP which is defined as follows:

- Those resources required for all plans, actions, or measures necessary to establish and maintain an industrial base, both government-owned and privately-owned, that is required to support current, wartime, or other contingency military requirements. It includes industrial preparedness measures, such as modernization and preservation of the production facilities and contributory activities and services for planning with industry which are essential to the accomplishment of the complete industrial preparedness program, specifically identified and measurable to the following:

- Acquisition of new plants or equipment (industrial facilities)
- Replacement, rehabilitation, modernization, and other than normal maintenance of industrial facilities, including correction of environmental protection deficiencies
- Reactivation of idle industrial facilities

- Lay-a-way, maintenance, and protection of idle industrial facilities and similar actions related to the retention of underutilized capacity being retained for mobilization or other emergency use
- Operation of the Defense Industrial Plant Equipment Center and Military Service activities with primary responsibility for the management of Service-owned industrial plant equipment, and special tooling and special test equipment
- Production planning with the industrial production base, as prescribed by the DoD 4005 series of directives and instructions and related policy guidance
- Industrial Defense Program activities, specifically physical security systems for production facilities
- Determination of mobilization requirements when performed as a separate identifiable activity for production planning purposes
- Activities with the primary purpose of developing or refining manufacturing technology, processes, techniques, equipment, and completing advance production engineering measures
- Maintenance of production data packages
- Maintenance and operation of the Defense Priorities and Defense Materiel System
- Other actions designed to facilitate the attainment of scheduled production goals, such as overall management, support, activity inspections, etc.
- Acquire, maintain, or modernize special tooling and special test equipment and other production support equipment as required to support a viable industrial reserve capability
- Placement of educational orders, industrial readiness studies and measures, prepositioned materiel and components to support reserve production potential

DoD Directive 7220.17 requires accumulation of data breaking the PE down so that the subcategories shown on Table A-9 are available.

Headquarters Major Logistics Bases

These Headquarters are defined to include all of AFLC Headquarters and the command functions of the various Air Logistics Centers. These are presently included in the FYDP PE 72898, Command. The AFLC communication network, the computer time share communication network, and the communications resources in the ALS Computer System are included in PE 72895, Base Communications, Logistics.

**TABLE A-9. FUNCTIONAL CATEGORY -
INDUSTRIAL PREPAREDNESS**

- Maintenance of
 - Government-Owned Production Facilities
 - Industrial Plant Equipment
- Emergency Production Requirements and Scheduling
- Preparedness Planning Measures
- Priorities Allocation System
- Manufacturing Technology

Laundries and Printing Plants

Data on centrally managed, industrial-funded laundries and printing plants are available in the present FYDP. Not all such services are industrial funded, however. It is theoretically possible to obtain the following additional data by PE or MFP:

- Printing and Reproduction, Non-IF
- Printing and Reproduction, IF
- Laundry and Dry Cleaning, Non-IF
- Laundry and Dry Cleaning, IF

Both the IF and the non-IF laundry resources are associated with Linen Exchange which was included with the Base Operations Function described above. The non-IF printing and reproduction resources are associated with Base Administration which is also a part of Base Operations above. The costs associated with obtaining data at this level of detail probably outweigh the benefits to be derived.

Aircraft Storage (Mothballing)

Resources associated with the Military Aircraft Storage and Disposition Center (MASDA), Davis-Monthan Air Force Base are presently included in PE 72207, Depot Maintenance (non-IF). These could be identified and programmed separately if desirable.

RESOURCE CATEGORIES

Resource categories identify types of resources and are of three types: (1) funding or TOA categories, (2) manpower categories, and (3) force categories which show the number of identified end items or systems supported. The categories used in the LRA correspond with the Resource Identification Codes (RIC) used in the FYDP and designated in DoD Handbook 7045.7-H. Suggested resource categories are shown on Table A-10.

The appropriation categories are well understood and require no elaboration here. Manpower totals are year-end authorized strengths and can be manipulated to obtain the Military Personnel Appropriation above. End Item Data is intended to show appropriate year-end authorized numbers of equipment or facilities support. Note that this data is available (for the President's Budget) at the Air Staff level, but is not necessarily forwarded to OSD.

PROGRAM CATEGORIES

The program categories suggested for the LRA are based on the ten Major Force Programs (MFP) presently included in the FYDP. Detail below MFP is required for some functions, particularly maintenance. Force RICs will be used as subcategories of the MFP. A list of RICs are shown on Table A-11.

It is neither feasible nor necessary to display data by all the RICs shown on the table. Many of the aircraft are not in active forces and others are being phased out. However, USAF tabulations of RICs by PE illustrate many of the problems associated with identifying maintenance to end items. The F-4 Squadrons PE include funding for T-38 operations; Minutemen includes helicopter support; and some MFP-3 PE contain a composite of aircraft, radar, and communication RICs. Thus, although the Force RIC will not necessarily lead to a clear identification of logistics functions to end item or system, they can be used to show the degree to which the maintenance resources indicated are multi-system oriented.

TABLE A-10. RESOURCE CATEGORIES

Appropriation (TOA)

Development

RDT&E

Investment

Procurement
Aircraft
Missiles
Other

Military Construction

Family Housing - Defense

Operations

Operations and Maintenance

Military Personnel

Family Housing - Defense

Manpower (No. of Personnel)

Military Personnel
Officers
Enlisted

Civilian Personnel

US - Direct Hire (USDH)
Foreign National - Direct Hire (FNDH)
Foreign National - Indirect Hire (FNIH)

End Item Data (as appropriate)

UE Aircraft and Missiles

Flying Hours

Radars

Number of Facilities

TABLE A-11. FORCE RESOURCE IDENTIFICATION CODES

Aircraft

<u>Code</u>	<u>System</u>	<u>Code</u>	<u>System</u>	<u>Code</u>	<u>System</u>
2001	A-7	2335	EC-135	2601	H-3
2002	A-10	2342	HC-130	2621	CH-3
2004	A-37	2355	KC-135	2625	CH-53
2100	B-1	2362	RC-130	2641	HH-3
2104	B-52	2365	RC-135	2644	HH-43
2105	B-57	2372	WC-130	2645	HH-53
2108	FB-111	2375	WC-135	2680	TH-1
2115	EB-57	2382	DC-130	2690	UH-1
2138	EF-111	2387	VC-137	2701	O-2
2200	C-5	2400	F-4	2702	OV-10
2201	C-7	2401	F-5	2707	T-38
2206	C-97	2402	F-15	2708	T-39
2208	C-119	2406	F-100	2800	U-2
2209	C-121	2407	F-101	2801	U-3
2239	EC-121	2408	F-102	2804	U-10
2256	KC-97	2409	F-104	2900	VC-6
2300	C-123	2460	RF-4	2902	VC-140
2302	C-130	2467	RF-101	2903	E-3
2305	C-135	2500	F-105	2904	E-4
2306	AMST	2501	F-106	2905	SR-71
2307	C-141	2502	F-111	2907	VC-9C
2312	AC-130	2504	F-16		

Missiles

<u>Code</u>	<u>System</u>	<u>Code</u>	<u>System</u>	<u>Code</u>	<u>System</u>
8801	SRAM(B-52)	8830	AGM-28	8871	TITAN
8803	SRAM(FB-111)	8845	AQM-34	8881	MM II
8805	SRAM(B-1)	8850	ADM-20B	8882	MM III
8820	AGM-84				

Command, Control, Communications

<u>Code</u>	<u>System</u>	<u>Code</u>	<u>System</u>	<u>Code</u>	<u>System</u>
4211	494L	4280	BMEWS	4313	TAC CTR GP
4215	SAT STA	4282	474N	4314	TAC CTR SQ
4216	GRND STA	4283	SPARS	4315	MOB COMM GP
4217	MULTI-PUR FAC	4290	RDR FAC	4318	MOB COMM FLT
4225	REG CTR CT	4291	CAMERA FAC	4319	MOB COMM SQ
4230	ROCC	4292	RDR FAC OTH	4320	SP COMM SQ
4243	MANUAL CC	4293	ELEC/OPT FAC	4321	ELECT INS SQ
4252	BUIC III	4294	SPACE COMP CT	4324	TAC AIR SPT
4260	SEARCH RDR	4295	SPACE SENSOR	4330	ATRC FLT
4264	AUTO SRCH RDR	4300	CMDCT AUTO	4331	FLT FAC FLT
4265	MAN SRCH RDR	4311	AC&W AUTO	4332	COMM FLT
4270	DEW MAIN	4312	AC&W MANUAL	4370	LCC SITE
4272	DEW EAST				

APPENDIX B

THE AIR FORCE FORCE AND FINANCIAL PROGRAM

The F&FP report is the basis for the Air Force input to the FYDP. The programming process in the Air Force is almost entirely an Air Staff exercise starting with the JSOP and continuing through the completion of an approved budget and five year program. There is, of course, considerable interaction between the Staff and Major Commands during the budget preparation process, but budget decisions are made and beyond budget year planning is done at the Air Staff level.

The system supporting the F&FP is extensive and contains a considerable body of information not normally forwarded to OSD. This appendix discusses the F&FP system and data base as a possible source of information for the Logistics Resource Annex.

The F&FP is used throughout the PPB cycle and is updated at least three times per year for the: (1) POM, (2) Air Force Budget request and (3) President's Budget. It is interesting to note that the data base supporting the F&FP also contains historical data for prior years on a relatively consistent basis. In keeping with general DoD practice, the F&FP is geared to short range planning of operations and longer range planning for procurement, RDT&E, and construction. The latter group of appropriation categories requires a longer range view, partly because of the multi-year nature of many DoD projects. The O&M appropriation, on the other hand, is limited to one year, hence there has been limited emphasis on long term planning for operations (except perhaps force levels) including logistics. The recent emphasis on Operating and Support Costs (O&S) in the systems acquisition process may, but has not yet, change this situation. As a result, the logistic information available at the OSD level has been quite limited.

Since the F&FP system is used throughout the PPB cycle, it can be manipulated to show the results of POM issue considerations and program change decisions. It accepts

force levels, weapon systems inventories and activity rates as inputs. Costs are either estimated outside the system (the procurement cost of a new aircraft system is one example) or through a series of programming factors developed by program element (supplies drawn from the general support stock fund, for example). The data processing system, discussed below, is designed to produce three major outputs:

- (1) The F&FP document itself and a tape used to generate the Air Force portion of the FYDP
- (2) The Procurement Annex or a listing of all items programmed for procurement by Appropriation, Budget Activity, Weapon System and year of appropriation
- (3) The RDT&E Annex or a listing of programmed resources by Appropriation, Budget Activity and Program Element

In addition to these outputs which are integrated into a single F&FP data base, a separate, but related subsystem is used to produce the Telecommunications Annex, a display of selected program elements involved in that area. Finally, a report of military construction plans included in the FYDP is generated by hand. This document, sometimes referred to as the MILCON Annex, agrees in total with the FYDP, but is not part of the basic F&FP system.

Functional data available at the OSD level from the F&FP is aggregated to the program element level. Since a program element can contain a mix of operations, logistics, administrative and personnel support resources, a clear cut display of logistics resources is not available. Reports are available by Resource Identification Code (RIC) or by DoD Element of Expense. While somewhat useful, these additional breakdowns of a program element are not particularly helpful in disaggregating the functions included. While the RICs can be used to display the major end item content of a PE, in the categories shown on Table B-1, cross referencing of system RICs and personnel or appropriation RICs is not required (Table B-2). Thus, while it is possible to display the systems supported by a particular PE, it is not possible to identify the TOA or manpower to either weapon systems or support function.

TABLE B-1. RESOURCE IDENTIFICATION CODES
USAF WEAPON SYSTEMS

Authorized UE Aircraft

<u>Code</u>	<u>System</u>	<u>Code</u>	<u>System</u>	<u>Code</u>	<u>System</u>
2001	A-7	2312	AC-130	2601	H-3
2002	A-10	2335	EC-135	2621	CH-3
2004	A-37	2342	HC-130	2625	CH-53
2100	B-1	2355	KC-135	2641	HH-3
2104	B-52	2365	RC-135	2644	HH-43
2105	B-57	2372	WC-130	2645	HH-53
2108	FB-111	2375	WC-135	2680	TH-1
2115	EB-57	2382	DC-130	2690	UH-1
2138	EF-111	2386	VC-137	2701	O-2
2200	C-5	2400	F-4	2702	OV-10
2201	C-7	2401	F-5	2707	T-38
2202	C-9	2402	F-15	2708	T-39
2206	C-97	2406	F-100	2800	U-2
2208	C-118	2407	F-101	2801	U-3
2209	C-121	2408	F-102	2804	U-10
2239	EC-121	2409	F-104	2900	VC-6
2256	KC-97	2460	RF-4	2902	VC-140
2300	C-123	2467	RF-101	2903	E-3
2302	C-130	2500	F-105	2904	E-4
2305	C-135	2501	F-106	2905	SR-71
2306	AMST	2502	F-111	2907	VC-9C
2307	C-141	2504	ACF		

Command Control Communications Systems

<u>Code</u>	<u>System</u>	<u>Code</u>	<u>System</u>	<u>Code</u>	<u>System</u>
4211	494 L	4272	DEW - EAST	4313	TAC CTR GP
4215	SAT STATIONS	4280	BMEWS	4314	TAC CTR SQ
4216	GRND STATIONS	4282	472 N	4315	MOB COMM GP
4217	MULTI FACS	4283	SPARS	4318	MOB COMM FLT
4225	REGIONAL CC	4290	RADAR FAC	4319	MOD COMM SQ
4230	ROCC	4291	CAMERA FAC	4320	SP COMM SQ
4243	MANUAL CC	4292	RDR FAC - OTH	4321	ELEC INSTAL SQ
4252	VUIC III	4293	ELEC/OPT FAC	4324	TAC AIR SPT GP
4260	SEARCH RADAR	4294	SPACE COMP CTR	4330	AIR TFC CTR FLT
4264	SRCH RDR - AUTO	4300	CMD CTR AUTO	4331	FLT FAC FLTS
4265	SRCH RDR - MAN	4311	AC&W AUTO	4332	COMM FLT
4270	DEW - MAIN	4312	AC&W MANUAL	4370	LCC SITES

Authorized UE Missiles

<u>Code</u>	<u>System</u>	<u>Code</u>	<u>System</u>	<u>Code</u>	<u>System</u>
8801	SRAM(B-52)	8830	AGM-28A/B	8871	LGM-25C TITAN
8803	SRAM(FB-111)	8845	AQM-34	8881	LGM-30F MM II
8805	SRAM(B-1)	8850	ADM-20B/C	8882	LGM-30G MM III

**TABLE B-2. RESOURCE IDENTIFICATION CODE CATEGORIES
USAF AUTHORIZED PERSONNEL AND APPROPRIATIONS**

Personnel

<u>Category</u>	<u>Officers</u>	<u>Enlisted</u>	<u>Civilian</u>
Active Service	X	X	
Reserve-48 Drill	X	X	
Reserve-24 Drill	X	X	
Reserve-Other	X	X	
Active Duty Reserve	X	X	
National Guard-48 Drill	X	X	
Active Duty Guard	X	X	
Air Force Academy		X	
Aviation Cadets		X	
ROTC-Basic		X	
-Advanced		X	
US-Direct Hire			X
Foreign-Direct Hire			X
Foreign-Indirect Hire			X

Appropriations

Development

RDT&E
Special: Foreign Currency

Investment

Special: Foreign Currency
Procurement-Aircraft
Procurement-Missile
Procurement-Other
Military Construction
MILCON-Reserves
MILCON-Guard
Family Housing Defense

Operations

O&M-Reserves
O&M
O&M-Guard
Family Housing-
 Debt Payment
 Defense
Military Personnel
Reserve Personnel
Guard Personnel
Industrial Funds
Operating Gains & Losses
Stock Funds (WRM)(Memo)

The resource problems associated with PE aggregation can be illustrated by considering two Program Elements: PE 27128, F-4 Squadrons and PE 27597, Training. PE 27128 contains part or all of the following organizations:

- (1) Elements of Wing Headquarters, including the bulk of Maintenance and Operations staff
- (2) Tactical fighter squadrons

(3) Organizations, field, avionics and munitions maintenance squadrons

However, the PE excludes advanced flying training and base and mission support aircraft. Resources devoted to these activities are not part of PE 27128, but are instead included in 27597, Training and 27596, Base Operations. Thus, the F-4 and similar program elements represent some, but not all of the resources necessary to operate and maintain the particular systems.

A composite element like 27597, Training, is a complex collection of resources to support the identified function. Close examination reveals, however, that the PE include support for many weapon systems covering a variety of operating and support functions. The following systems were allocated to PE 27597 in a recent F&FP exercise: A-7, A-10, F-4, F-5, F-15, F-104, RF-4, F-111, F-16, O-2, OV-10 and T-38. Operations costs include a slice of aircraft maintenance and the procurement appropriations include allocations of such items as AGE, modification kits and replenishment spares. These cannot, of course, be identified from the FYDP Program Element aggregation.

THE F&FP DATA BASE

The process used in the Air Force to develop the F&FP contains program information for some logistics functions that could be useful as inputs to the LRA. Program Element data is estimated by element of expense. Certain of these, particularly those associated with the investment appropriations, are programmed on a weapon systems basis. A list of cost elements programmed by the Air Force and potentially relevant to LRA development are shown on Table B-3 to B-6.

All cost elements are identified to (and may be displayed by) FYDP program element, USAF Major Command, and OSD fiscal guidance category. In the procurement appropriations, cost elements are further identified to weapon systems (MDS) and in the O&M and Military Personnel appropriations to Air Force Elements of Expense. Groupings of cost elements from the F&FP data file are used to prepare reports required by OSD

**TABLE B-3. POTENTIALLY RELEVANT COST ELEMENTS
AIRCRAFT (3010) AND MISSILE (3020) PROCUREMENT**

Cost Element	Approp. 3010 Aircraft	Approp. 3020 Missile
Peculiar Support	X	X
AGE		X
Modernization		X
Modifications-Class V	X	X
-Class IV	X	X
Common AGE	X	
-New Acquisition	X	
-Simulators	X	
-Depot Modernization	X	
-WRM Stockpile	X	
Component Improvement	X	
Replacement Equipment		X
Industrial Facilities	X	X
Replenishment Spares	X	X
-MAP	X	
-WRM	X	
Initial Spares-Weapon Systems	X	X
-Modification	X	X
Other Spares-Common AGE	X	
-Common AGE (Simulators)	X	
-Force Modernization		X
War Consumables	X	

Notes: (1) Separate cost elements for escalation and adjustments for advanced buy funding are included in the F&FP data file but not shown in this list of cost elements.

(2) Common AGE and Replenishment Spares for aircraft are estimated on a cost per FH basis.

**TABLE B-4. POTENTIALLY RELEVANT COST ELEMENTS
OTHER PROCUREMENT (3080) AND MILCON (3300)**

Other Procurement (3080)

Munitions and Associated Equipment
-Modifications

Vehicular Equipment
-Modifications

Cryptological Equipment
-Initial Spares
-Replenishment Spares
-Modifications
-Modification Spares

Electronics and Comm. Equipment
-Initial Spares
-Replenishment Spares
-Modifications
-Modification Spares

Other Base Maintenance & Spt. Equipment
-Modifications

Other Industrial Facilities

Military Construction (3300)

Advanced Project Planning

MILCON-Inside USA
-Outside USA

Minor Construction

Support Activities
-Access RDS

TABLE B-5. POTENTIALLY RELEVANT COST ELEMENTS
OPERATIONS AND MAINTENANCE (3400)

<u>EEIC</u>	<u>COST ELEMENT</u>	<u>EEIC</u>	<u>COST ELEMENT</u>
CIVILIAN PERSONNEL			TRAVEL & TRANSPORTATION OF PERSONS
386	SEPARATION ALLOWANCE-FNDH	401	TDY-UNIT ROTATION-ASIF
388	CIV LEAVE (JOCAS)	402	-UNIT ROTATION-OTHER
390	CIV REIMBURSEMENTS	403	OTHER SPT-LOGISTICS
391	OVERTIME	404	OTHER SPT-TRNG
392	OTHER CIV PERS COST	405	OTHER SPT-OPERATION
393	HEALTH BENEFITS	406	TDY-USAF EXERCISES-OTHER
394	CLOTHING ALLOWANCE	407	-OTHER PURPOSES-ASIF
395	MOVING ALLOWANCE	408	-OTHER PURPOSES-OTHER
396	LUMP SUM LEAVE	409	-PER DIEM
397	VIMS-BEAMS	421	PCS-CIVILIAN
398	CIV PERS BORROWED	422	PCS-CIVILIAN-OTHER
399	OTHER CIV COSTS	431	RENT-PASS VEH-FULL TIME
		432	-PART TIME
RENTS, COMM, UTILITIES			TRANSPORTATION OF THINGS
471	LEASED SPACE	450	TRANS OF THINGS-MIL
472	RENT-ADP EQUIP	451	TRANS-UNIT ROTATION-ASIF
473	-OTHER EQUIP	452	-JCS EXERCISES-ASIF
480	PURCHASED UTILITIES	453	-USAF EXERCISES-ASIF
491	COMMERCIAL COMM SYSTEMS	454	-OTHER-ASIF
492	ADMIN SWITCHBOARD	461	-MSC
493	NON-TACTICAL RADIO	462	-COMMERCIAL AIR
494	WIRE COMM SYSTEMS	463	-COMMERCIAL SURFACE
495	OFFICIAL TOLLS	464	-LOGAIR
496	OTHER COMMERCIAL COMM	465	PORT HANDLING CHARGES
497	CLASS B TOLLS & REIMB	466	RENT-OTHER VEHICLES
498	COMMERCIAL COMM-DCS	467	SURCHARGES
499	ALASKAN COMM SERV-IF	469	OTHER TRANS CHARGES
OTHER SERVICES			DEPOT MAINTENANCE
501	PRINTING-REPRODUCTION	540	DEPOT MAINT
502	PRINTING FROM OTHERS	541	AIRCRAFT MAINT-DMIF
511	FNIH-BASE COST-EMPLOY	542	MISSILE MAINT-DMIF
512	FAMILY HOUSING DEF-PERS TRF	543	ENGINE MAINT-DMIF
513	BASE PRODUCED UTIL-FAM HOU	544	MAJOR ITEM MAINT-DMIF
514	MOTOR VEHICLE RENT-FAM HOU	545	EXCHANGE ITEM-DMIF
515	CIV LABOR REIMB-FAM HOU	546	AREA-BASE SPT-DMIF
516	OTHER DIRECT COST-REIMB	547	BASE/TENNANT SPT-DMIF
517	OVERHEAD REIMB	548	LOCAL MFGR-DMIF
519	FNIH-ADMIN CHARGES	549	PURCHASED-OTHER DOD
521	FACILITY MAINT-CLASS M		
522	FACILITY REPAIR-CLASS R		
529	MINOR CONSTRUCTION-CLASS MC		
531	CUSTODIAL SERVICES		
532	ENGINEERING SERVICES		
533	OTHER CIV ENGR SERVICES		
PURCHASED MAINTENANCE			
560	DEPOT MAINT BY CONTRACT		
568	PURCH MAINT-ADPE		
569	PURCH MAINT-OTHER EQ		

**TABLE B-5. POTENTIALLY RELEVANT COST ELEMENTS
OPERATIONS AND MAINTENANCE (3400) (Continued)**

<u>EEIC</u>	<u>COST ELEMENT</u>	<u>EEIC</u>	<u>COST ELEMENT</u>
<u>EDUCATIONAL SERVICES</u>		<u>CONTRACTOR OPERATED FACILITIES</u>	
551 EDUCATIONAL SERVICES		570 CONTRACTOR OPER FAC.	
552 EDUCATIONAL SVC-DEPENDENTS			
553 PROFESSIONAL EDUCATION			
<u>SUPPLIES, MATERIEL, EXPENSED EQUIP</u>		<u>OTHER CONTRACTUAL SERVICES</u>	
120	INVENTORY-OTHER SPT MAT'L	581	MAC ASIF-MISN ACCT
124	-MDV SPT	582	DATA PROC SERVICES
130	-OTHER EXCHANGE EQ	583	CONTRACT FOOD SERVICE
134	-MDV EXCHANGE EQ	584	CONTRACT ENGR/TECH SVC
140	-NON-EXCHANGE, OTHER	586	PROPERTY DISP-R&M
144	-NON-EXCHANGE, MDV	587	REAL PROPERTY DISPOSAL
145	-GROUND COMM	589	OTHER PURCHASED SERVICES
600	FUELS FOR UTILITIES	591	REIMB TO OTHER SVCS
601	AVPOL-AFSF	592	MISC CONTRACTOR SVC
602	PACKAGED POL	593	LAUNDRY/DRY CLEAN-IF
603	MISSILE PROPELLANTS-AFSF	594	PROCESSING TECH DATA
604	MDV SUPPLIES-AFSF	595	INSURANCE-FEES-TAXES
605	SYSTEM SPT DIV-AFSF	596	MEDICAL TRANSFERS
606	EDUCATIONAL SPT-AFSF	597	PACAF UNIQUE
607	COMMISSARY DIV-AFSF	598	INCENTIVE AWARDS-MILPERS
608	CLOTHING DIV-AFSF	599	REIMB RECEIVED/CREDITS
609	GENERAL SPT DIV-AFSF		
610	SUPPLIES-OS COSTING		
612	FUEL, OIL, LUB-NONFLY-NON SF		
613	SUBSISTENCE IN KIND	651	SAND & STRUCTURES
614	MDV-NON SF	660	INVESTMENT-LOANS
615	AMMUNITION-NON SF	671	DAY IN LIEU-TAXES
618	CLOTHING/TEXTILES-NON SF	681	INTEREST/DIVIDENDS
619	OTHER MAT'L-NON SF	689	POL-REIMB
624	EXPENSED EQUIP-MDV-AFSF	690	AVPOL-ADJUSTMENTS
626	-EDU-AFSF	691	AVPOL-TEST
628	-GEN SPT-AFSF	692	INSURANCE, CLAIMS, INDEM
634	-MDV-NON SF	693	AVPOL-NON FLY-TESTS
635	-CIV ENGR-NON SF	694	REFUNDS PAID
639	-OTHER-NON SF	699	AVPOL-STANDARD RATES
<u>MOTOR VEHICLE MAINT-CHARGES</u>		<u>MOTOR VEHICLE MAINT-CREDITS</u>	
716	MOTOR VEHICLE COST DISTR	816	MOTOR VEHICLE COST CREDITS
740	MV MAINT MAT'L EXPENSE		
<u>OTHER CREDITS</u>			
		820	CIVIL ENGR SVC-CREDIT
		821	CE WORK DISTR-CREDIT
		840	MAT'L MAINT SVC CREDIT

TABLE B-6. POTENTIALLY RELEVANT COST ELEMENTS
MILITARY PERSONNEL (3500)

<u>ASSIGNED PERSONNEL-USAF</u>	<u>ASSIGNED OUTSIDE USAF</u>
AIR FORCE PERSONNEL-OFFICERS	AF PERS ASSIGNED TO ARMY-OFF
AIR FORCE PERSONNEL-AIRMEN	AF PERS ASSIGNED TO ARMY-AMN
ARMY PERSONNEL-OFFICERS	AF PERS ASSIGNED TO NAVY-OFF
ARMY PERSONNEL-ENLISTED	AF PERS ASSIGNED TO NAVY-AMN
NAVY PERSONNEL-OFFICERS	AF PERS ASSIGNED TO MARINE-OFF
NAVY PERSONNEL-ENLISTED	AF PERS ASSIGNED TO MARINE-AMN
MARINE CORPS PERSONNEL-OFFICER	AF PERS ASSIGNED TO OSD-OFF
MARINE CORPS PERSONNEL-ENLISTED	AF PERS ASSIGNED TO OSD-AMN
MIL PERS BORROWED-OFF	AF PERS ASSIGNED TO JCS-OFF
MIL PERS BORROWED-ENL	AF PERS ASSIGNED TO JCS-AMN
MIL PERS LOANED-OFF	AF PERS ASSIGNED TO DNA-OFF
MIL PERS LOANED-ENL	AF PERS ASSIGNED TO DNA-AMN
MAIR FORCE STUDENTS-OFF	AF PERS ASSIGNED TO DCA-OFF
AIR FORCE STUDENTS-AMN	AF PERS ASSIGNED TO DCA-AMN
CADETS	AF PERS ASSIGNED TO DIA-OFF
<u>UNASSIGNED-USAF</u>	AF PERS ASSIGNED TO DIA-AMN
AIR FORCE PATIENTS-OFF	AF PERS ASSIGNED TO NSA-OFF
AIR FORCE PATIENTS-AMN	AF PERS ASSIGNED TO NSA-AMN
AIR FORCE PRISONERS-OFF	AF PERS ASSIGNED TO DSA-OFF
AIR FORCE PRISONERS-AMN	AF PERS ASSIGNED TO DSA-AMN
AWAITING ASSIGNMENT-OFF	AF PERS ASSIGNED TO DMA-OFF
AWAITING ASSIGNMENT-AMN	AF PERS ASSIGNED TO DMA-AMN
AF PERS SUPPORT, OTHER-OFF	AF PERS ASSIGNED TO DIS-OFF
AF PERS SUPPORT, OTHER-AMN	AF PERS ASSIGNED TO DIS-AMN
<u>OTHER COST ELEMENTS</u>	AF PERS ASSIGNED OT/DOD-OFF
DOLLAR DEVALUATION-PCS	AF PERS ASSIGNED OT/DOD-AMN
DOLLAR DEVALUATION-AMN	AF PERS ASGND OUT-DOD-REIM-OFF
DOLLAR DEVALUATION-OFF	AF PERS ASGND OUT-DOD REIM-AMN
PERMANENT CHANGE OF STATION	AF PERS ASGND OUT-DOD-NONR-OFF
DISLOCATION ALLOWANCE-MIL.	AF PERS ASGND OUT-DOD NONR-AMN
TRANSPORTATION OF HH GOODS-OFF	
TRANSPORTATION OF HH GOODS-AMN	

including the FYDP Annexes, and OSD Element of Expense reports. They are also used to prepare a variety of reports needed for internal USAF program management.

Selected cost elements in the Aircraft, Missile, and Other Procurement appropriations (see Table B-3 and B-4) reflect resource categories that can be identified to the logistics support function. These include peculiar support, common AGE, initial and replenishment spares, Class IV and Class V modifications of aircraft and missiles, modifications of various classes of support equipment, war consumables, industrial facilities and component improvements.

The military construction appropriation categories (Table B-4) are identified to particular program elements. Resources assigned to systems oriented PEs (i.e., F-4 Squadrons) represent planned construction required for system support. Thus, the assigned PE is a strong determinant of the purpose of the construction program. Additional information is available from the related MILCON Annex mentioned above.

The cost elements included as O&M (Table B-5) do not necessarily identify logistics resources. Separate cost elements are available for:

- (1) Transportation - military and civilian PCs, civilian TDY, ASIF transportation, commercial air and surface, LOGAIR and port handling charges
- (2) Other functions - printing and reproductions, laundry and dry cleaning - IF, and certain real property maintenance expense

In general, however, the only way to identify O&M funded logistics resources is through the program element itself. If the PE is categorized as logistics support, then the resources are logistics oriented. Unfortunately, only a few PEs can be so categorized. These are: the central supply and maintenance elements in Program 7, some of the transportation PEs in Program 4 and the base operations and real property maintenance PEs throughout the ten major force programs.

Since most PEs represent a mixture of logistics and non-logistic functions, it is impossible to identify O&M funded logistics resources within the existing F&FP data base

for most elements. However, some stock fund purchases are estimated by means of a cost per flying hour factor which allows the identification of system oriented O&M funded maintenance material by MDS.

Thus, the F&FP data base can provide reasonably sound inputs to an LRA for programmed logistic resources funded through investment appropriations. Present practices and methods do not, however, yield a functional breakdown below the program element for O&M, or Military Personnel funded resources.

SUPPORTING DOCUMENTS

The F&FP is supported at the Air Force level by programming documents produced by the Air Staff. The six major supporting documents are:

- (1) The Program Guidance Document (PA) which contains a 5½ year projection of:
 - (a) Objectives, assumptions, and guidance for program development
 - (b) Composition, phasing, equipping, and deployment of forces
- (2) The Bases, Units and Priorities (PD) which contains a 5½ year projection for:
 - (a) Principal guidance on installations
 - (b) Priorities for manning and equipping units
- (3) The Aerospace Vehicles and Flying Hours Document (PA) which contains a projection of:
 - (a) Aircraft and flying hours by type, model, series
 - (b) Aircraft and flying hours by MAJCOM
 - (c) Drones and flying hours
 - (d) Missiles and spacecraft by type, model, and series (T/M/S)
- (4) The Programmed Special Weapons Capabilities and Equipage Document (PS) which contains a 3-year projection of:
 - (a) Special weapons by type
 - (b) Unit capability
 - (c) Special weapon training and support units capability

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- (5) The Manpower and Organization Document (PM) which contains a 5½ year projection of:
 - (a) Manning authorizations for all AF units
 - (b) Personnel strengths by MAJCOM, base and unit
- (6) The Communications Electronics Document (PC) which contains a 5½ year projection of approved and projected operational ground communications electronics programs

These documents are not normally forwarded to OSD. The PM document, or more particularly the data base from which it is drawn, could, however, be of significant value in identifying base level authorized personnel to logistic function and weapons system. The data base is discussed in detail in Appendix C.

DATA PROCESSING ASPECTS OF F&FP PREPARATIONS

The Air Force F&FP data processing system consists of a series of about 130 computer routines which can be combined in various ways to update the files and print the F&FP output reports. A separate set of programs and files is used to produce the Telecommunications Annex.

Four major files are used in the F&FP system. These are:

- (1) Manpower - authorized end year strengths by PE
- (2) Base File - force levels (UE), buy and delivery data, flying hours and aircraft inventories, manpower (from above) and cost data
- (3) Net Change File - all changes from the base file resulting from various decisions made during the programming cycle
- (4) Factor File - unit costs by weapon systems, civilian and military pay rates, man year phasing factors

At the start of a programming cycle, manpower, force level and activity rate inputs (along with any predetermined cost data) are merged into the Base File to form what could be considered a base case FYDP. Cost based on factors are determined from inputs from the Base File merged with the Factor File and stored in the Net Change File.¹ Any

¹Cost throughput, or predetermined costs, will override any factor determined costs.

changes occurring during the programming cycle are calculated (or inputed) and stored in the Net Change File. Output reports are generated as required by merging the Base and Net Change Files.

An OSD summary tape is produced for each FYDP update. A net change file tape is forwarded to adjust the first FYDP submission as required. The Procurement Annex is a printed report produced from the updated F&FP files. All submissions to OSD are aggregated to OSD required detail. When the Air Force Program is approved, the Base File is modified and stored for future reference.

The F&FP reports are produced on the Honeywell 635 computer located at the Air Force Data Service Center (AFDSC). The computer and the associated software are not entirely adequate for the F&FP system. Total run time is typically eight hours and has been as much as 12 to 14 hours per iteration. Historically, the period of time available to respond to program decisions has been quite short and a quick turnaround capability for F&FP production is essential. Thus, the data processing aspects of F&FP preparation will be an important consideration in the implementation of an LRA.

APPENDIX C

DATA SYSTEMS POTENTIALLY USEFUL IN LRA DEVELOPMENT

In practical terms, the information elements that can be included in the LRA must be available in existing data systems. In the most favorable cases, the LRA information elements can be obtained by rearranging or reaggregating data already included in the OSD or Air Force Programming systems. As discussed in Appendix B, many logistics resources funded through the investment appropriations are in this category. Less favorable, but theoretically feasible, conditions exist when the desired LRA information element is available in an existing historical data system. The historical data can then be used to develop programming factors for the LRA. This Appendix assesses the utility of a variety of DoD and Air Force reporting systems in supporting LRA development.

LMI did not attempt to examine all applicable USAF data systems during this research. In general, the investigation was limited to the programming system and other data available at the Air Staff level. When it became apparent that the most serious problems exist for base level logistics activities, the analyses were extended to cover the USAF Accounting System for Operations (ASO) and certain other data routinely prepared at Air Force Bases. We did not, however, examine data systems associated with supply management. These systems, available at base level, could provide an important link between maintenance materiel and weapon systems.

Air Force organizations and management procedures are important to an understanding of data problems. Air Force units tend to be organized along functional lines with separate entities for the various operational, personnel support and logistics activities. Thus, a Wing will have separate squadron organizations for such functions as supply, transportation, and the various categories of maintenance. In addition, efficiency dictates that certain functions like personnel administration, supply, transportation, and

civil engineering be consolidated to provide base-wide support. It is not uncommon to have units from several major commands stationed at a given base. This gives rise to complex host-tenant relationships where the host provides some services to tenants that are reimbursed and some services which are not. Finally, most bases, at least in the US, are supported by special teams from the AF Audit Agency, the Postal-Courier Service, and the Office of Special Investigations, among others. Bases that support flight activity will also have an Aerospace Rescue and Recovery Detachment (ARR) and a Weather Detachment. Air Traffic Control services are generally provided by a Communication Squadron or Flight. Table C-1 shows the organizations located at England AFB in 1972. Note that the 23rd Tactical Fighter Wing is the host. These organizations would appear in 26 different Program Elements in four Major Force Programs in the FYDP. The breakdown by organization is as follows:

	<u>PE</u>	<u>MFP</u>
Wing	8	3
9 ARR	3	3
1908 COMM SQ	3	2
Hospital	5	1
4410 SOT	4	2

Resource management at the base level tends to follow the functional organization line. The ASO is, however, mapped to Program Elements so that both budgeting and budget control are accomplished at the PE level.

Although financial management in the Air Force can be described as functionally oriented, it is not, unfortunately, weapon system oriented. The Air Force Visibility of Management and Support Cost (VAMOSC) effort, which examined a broader range of data systems than are discussed here, concluded, in essence, that the identification of resources to weapon systems is impossible with the present structure of the financial

TABLE C-1. ORGANIZATIONS AT ENGLAND AFB

<u>23RD TACTICAL FIGHTER WING</u>	<u>OTHER ORGANIZATIONS</u>
WING STAFF	USAF HOSPITAL
OFFICE OF INFORMATION	
SAFETY	4410 SOT GROUP
PERSONNEL	
DRUG ABUSE	351 FIELD TRAINING DT 309
OPERATIONS	
COMBAT SUPPORT GROUP	OSI DET 901
CHAPLAIN	BASE WEATHER DET 5, 5 WING
ADMINISTRATION	
PROCUREMENT	ARR DET 9
COMPTROLLER	
PERSONNEL	1908 COMM SQ
SPECIAL SERVICES	
DEPENDENT SCHOOLS	AIR POSTAL
TRANSPORTATION	AUDITOR GENERAL
SUPPLY SQ	SPT SQ DET 24
CIVIL ENGINEERING	ROTC LSV DET 310
SECURITY POLICE	ROTC USL DET 315
SERVICES SQ	ROTC LAMAR DET 842
CLOTHING SALES	
COMMISSARY	
HOUSING SERVICE	
BASE EXCHANGE	
FOOD SERVICE	
LINEN EXCHANGE	
TACTICAL FIGHTER SQS	
ORGANIZATION MAINT	
FIELD MAINT	
AVIONICS MAINT	
MUNITIONS MAINT	

management system.¹ Further, since resources are not managed by weapon system, the large scale changes in basic accounting systems required to achieve weapon system identification are probably too costly when compared to possible benefits derived.

The fact that USAF accounting systems do not track resources by weapon system rules out a highly idealized LRA. The functional orientation of the accounting system coupled with other available data strongly suggests, however, that significant improvement in the identification of logistics resources by function is not only feasible, but practical.

THE USAF F&FP

The principal utility and weaknesses of the F&FP as a source of LRA inputs were discussed in detail in Appendix B. Its contributions can be summarized as including:

- Good visibility for logistics resources funded through the investment appropriations. Most can be identified to weapon systems.
- Good visibility for those PEs that are logistics oriented, i.e., Inventory Control Points.
- Reasonable sources of detailed information on the consumption of certain IF funded logistics activities. These would include laundries, printing plants and MAC air lift.

In addition, the USAF produces several summary reports for internal purposes which are potentially useful either as LRA control totals or as direct inputs. These include:

- STD 116 - reports USAF Force and Equipage covering UE for aircraft and missiles and other Force RICs by PE.
- STD 117 - reports flying hours by PE for all aircraft (includes non-mission) supported by the PE.
- STD 117A - reports aircraft inventory summary by PE. This report includes non-UE aircraft which are excluded from STD 116 (and the FYDP). Examples include T-33s supporting F-4 Squadrons and helicopter support for missile squadrons.
- STD 118 - reports total flying hours for each aircraft type.

¹Note that although the 23rd Wing based at England is equipped only with A-7 aircraft, its maintenance organizations supported the T-33 aircraft used on the base for training purposes. It is impossible to separate O&M funded resources consumed for the A-7 and T-33 aircraft.

- STD 118A - reports aircraft inventory by type.
- STD 119 - reports flying hours and aircraft inventory by MFP.

These summaries are produced directly from the F&FP data base. Other summaries include those of appropriations and cost elements by PE and those of procurement and delivery schedules by PE.

CENTRAL SUPPORT LOGISTICS ACTIVITIES

A significant amount of visibility of logistics resources is available in existing DoD reports for central support logistics activities. The existing FYDP program element structure; DoD Handbook 7220.29, Department of Defense Depot Maintenance and Maintenance Support Cost Accounting and Production Reporting Handbook; and DoD Instruction 7220.17, Cost Accounting for Central Supply Management, Industrial Preparedness, and Terminal Operations reflect three data systems required by OSD.

A list of MFP-7 Air Force program elements is contained in Table C-2. These program elements reflect the present structure for reporting central logistics resources in the FYDP. The current program structure may be adequate for LRA purposes for program elements such as printing plants, laundries and second destination transportation, but is clearly inadequate for depot maintenance since these costs cannot be related to the weapon system oriented program categories contained in the LRA.

DoD Handbook 7220.29 contains a cost accounting structure for depot maintenance. The purpose of the Handbook is "to set forth a set of principles, standards, policies, definitions and requirements for uniform cost accounting and reporting by all DoD depot maintenance activities." All services are required to maintain, in a central location, a magnetic tape containing a specified set of data elements. Data is required for each type of equipment maintained by the work breakdown structure shown on Table C-3. The cost data covered includes the following elements:

- Direct Labor Production (Costs and Hours)

Civilian Labor
Military Labor

- Direct Labor Other (Cost and Hours)

 - Civilian Labor
 - Military Labor

- Funded Direct Materiel Costs

- Unfunded Direct Materiel Costs

 - Investment Items at Full Price
 - Exchanges
 - Modification Kits
 - Expenses, Customer Furnished

- Other Direct Costs

 - Funded
 - Unfunded

- Operations Overhead

 - Funded
 - Unfunded (MILPERS for indirect effort)

- G&A

 - Funded
 - Unfunded

- Contract/Interservice/Non-DM Cost

- GFE

 - Investment
 - Exchanges
 - Modification Kits
 - Expense

- Government Furnished Services

 - Funded
 - Unfunded

- Maintenance Support Costs Organic

 - Funded
 - Unfunded

These data can be used in conjunction with weapon system inventory and activity rate information to develop cost factors for projecting depot maintenance resource requirements in the weapon system program categories used in the LRA.

**TABLE C-2. PROGRAM 7, CENTRAL SUPPLY AND MAINTENANCE
PROGRAM ELEMENTS**

71111F	Supply Depots/Operations (Non-IF)
71112F	Inventory Control Point Operations
71113F	Procurement Operations
72007F	Depot Maintenance (IF)
72008F	Revenues (Depot Maintenance) (IF)
72033F	Printing Plants (IF)
72034F	Revenues (Printing Plants - IF)
72035F	Laundries (IF)
72036F	Revenues (Laundries - IF)
72207F	Depot Maintenance (Non-IF)
72894F	Real Property Maintenance Activities
72895F	Base Communications (Logistics)
72896F	Base Operations
72897F	Training
72898F	Command
78010F	Second Destination Transportation
78011F	Industrial Preparedness
78012F	Logistics Support Activities
78022F	Eastern Test Range
78023F	Eastern Test Range Communications
78024F	Continental Operations Range
78026F	PRAM PO
78110F	Service Support to DSA

Considerably more detailed cost information for supply depots/operations (PE 71111F), inventory control points (PE 71112F), procurement operations (PE 71113F), and industrial preparedness (PE 78011F) is available as a result of DoDI 7220.17, cost accounting for Central Supply Management, Industrial Preparedness, and Terminal Operations. The work breakdown structure for Supply/Depot Operations, Inventory Control Points and Industrial Preparedness is shown on Tables C-4 to C-5. Although this level of detail may not be required in the LRA, the availability of the data indicates that central support logistics resources enjoy a much higher level of visibility in existing DoD reports than do base-level resources in OSD level reports.

The above discussion has been limited to OSD level data systems as they might be useful for providing inputs to the LRA. Preliminary discussions with AFLC staff have revealed that several USAF data systems, particularly those used to prepare budget

TABLE C-3. HANDBOOK 7220.29 WORK BREAKDOWN STRUCTURE
(AIR FORCE EQUIPMENT ONLY)

- Aircraft (Fighters, Bombers, Transports and Utility Shown Separately)

Basic Aircraft (Airfame)
Engine
Aircraft and Engine Accessories/Components
Electronics/Communications Equipment
Armament
Support Equipment
Other

- Automotive Equipment

Basic Vehicle
Engine
Vehicle and Engine Accessories/Components
Electronics and Communications
Armament
Support Equipment
Other

- Construction Equipment

Basic Item
Engine
Vehicle and Engine Accessories/Components
Other

- Electronics and Communications

Radio
Radar
Wire and Communications
Other

- Missiles

Basic Missile (Frame)
Propulsion System and Components
Missile Accessories/Components
Support and Launch Equipment
Guidance System and Components
Surface Communication and Control Systems
Payload Systems and Components
Other

TABLE C-3. HANDBOOK 7220.29 WORK BREAKDOWN STRUCTURE
(AIR FORCE EQUIPMENT ONLY)
(Continued)

- Ordnance Weapons and Munitions

Nuclear Weapons
CB Weapons
Conventional Arms and Explosives
Artillery and Guns
Other

- General Purpose Equipment

Rail Equipment
Generators and/or Sets
General Purpose Maintenance Tooling/Equipment
Other Items

- Items Not Identified Above

TABLE C-4. WBS FOR SUPPLY DEPOT/OPERATIONS

- Storage and Warehousing

Receipt
Pack and Issue
Storage Support
Other Storage Operations

- Stock Control

Requisitioning
Other Stock Control Operations

- Traffic Management

Freight
Passengers
Household Goods
Training
Traffic Management Support

- Air Terminal Operations

General Terminal Support
Passenger Processing
Air Cargo Processing
Other Terminal Services (Air)

- Waterfront Support Operations

Outgoing Cargo Operations
Incoming Cargo Operations
Waterfront Container Operations
Other Waterfront Operations
Waterfront Support Operations

- Overall Supply Depot Support

requests, contain the information needed to identify important logistics cost elements such as replenishment spares, aircraft modification labor and materiel, and depot maintenance costs to the weapon system program categories needed in the LRA.

CENTRAL MANPOWER DATA BANK (CMDB)

The Central Manpower Data Bank, compiled and maintained for the Director of Manpower and Organization, Deputy Chief of Staff, Programs and Resources, USAF, is a computer system containing authorized year end strength data of considerable value to

TABLE C-5. WORK BREAKDOWN STRUCTURES

Inventory Control Points

Inventory Control
Commodity Management
Cataloging
Supply Standardization
Stock Control
Training
Inventory Control Support

Defense Logistics Service Center
Cataloging
Property Utilization
Overall Management/Support

Industrial Preparedness

Industrial Reserve Plants
Industrial Plant Equipment
Emergency Production Requirements/Scheduling
Preparedness Planning
Manufacturing Technology
Industrial Equipment Reserve
Overall Management/Support

LRA preparation. Historical data from 1965 to the present is available along with estimates for the program years. The data bank contains approximately 400,000 records most of which represent specifically identifiable individuals. Some of the data contained in a record are as follows:

Major Command
Base Name
Base Type
Unit Number, Kind and Type
Detachment Number
Air Force Program Element
Functional Account
AFSC Prefix, Special Prefix and Suffix
Civilian Employment Category
Organization Structure Code
PAS Code
Military Grade/Civilian Budget Project
Fund Code

Thus, the record identifies a particular position by unit down to the Detachment level, by organization and function, and by grade, both military and civilian.

The CMDB is a powerful tool for displaying manpower by logistic function and even perhaps by system where warranted. Some interesting displays could include manpower by:

- Program Element broken down by functional accounts
- Units operating a specific system such as an F-4 Wing by functional account
- Total USAF by functional account

Many other displays are possible, depending on the logistic function of interest. Functional Account Codes, which break operations, personnel support, and logistics activities into a variety of carefully defined subcategories are discussed in the next section of this appendix.

The CMDB supplies inputs to the USAF F&FP and is the basis for the PM series of supporting documents. The PM, among other things, shows manpower authorizations for the program years by base. The specific organizations down to two or three man special teams are shown for each base.

Manpower totals shown in the CMDB and the PM may not, however, agree precisely with the manpower totals shown in the F&FP or the FYDP. The CMDB reflects only approved decisions. Proposed actions on basing or deployments are included in the F&FP. The differences, when they occur, are generally small and easily reconcilable.

FUNCTIONAL ACCOUNT CODES

Functional Account Codes (FAC), discussed in AFM 300-4, define and categorize the functions performed by USAF military and civilian personnel. The coding system reflects USAF organizations (which are themselves functional-oriented) and can be mapped to organization codes and to the Accounting System for Operations. FACs are, therefore, an important tool in identifying personnel by logistics or other activities. Illustrations of FACs and how they map to other information systems will be presented after discussion of other pertinent identifiers.

ORGANIZATION CODES

The Organization Code is an alphabetical identifier which shows the activities performed within an organized unit. Most organizations will, for example, have command and unit administration activities. The command function in any organization, that is, a Supply Squadron or a Tactical Fighter Squadron, is identified by the 'ORG Code, AA. Other codes are used to identify specific functions and subfunctions.

ACCOUNTING SYSTEM FOR OPERATIONS (ASO)

The USAF Accounting System for Operations, which covers the O&M and Military Personnel Appropriations, is a key element of the USAF Resource Management System. Outputs of the system (historical data) are presently used to develop the Program Factors used for the O&M appropriation in F&FP preparation. It can also be used as a source for data in developing new LRA information element programming factors.

Responsibility Centers/Costs Centers/ Cost Accounts (RC/CC/CA)

The ASO is structured functionally reflecting USAF organizational practices. The RC/CC/CA structure is used for three distinct purposes:

- At Air Force base level they:
 - (a) Identify discrete organizational entities so that responsibility for controlling operating costs can be delegated to the chiefs of activities that have authority to consume the resources.
 - (b) Permit separation of organizational (responsibility and cost centers) and non-organizational (cost accounts) activities into segments that can be associated on a one-for-one basis with elements of the Five-Year-Defense-Program account structure.
- Air Force-Wide they identify common functional areas of activities, thereby permitting intermediate and major commands to compare the effectiveness and efficiency with which like functions use available resources.

Budget targets, obligations and expenses are recorded by RC/CC/CA code. The RC represents an organizational unit headed by an officer (such as deputy commander of a wing or base) who has responsibility and accountability for a segment of mission

performance. The RC is the focal point for exercising management control and one level of reporting for financial accountability. Responsibility Centers for a typical TAC Wing are:

<u>Organization</u>	<u>RC Code</u>
Wing Commander and Staff	40
DEP CMDR - Operations	44
Mission Squadrons RECON Squadrons	
DEP CMDR - Logistics	45
Supply Squadron Chief of Maintenance	
OMF FMS AMS MMS DMS	
Combat Support Group	41
Student Squadrons Transportation Squadron Security Police Squadron Civil Engineering Squadron Services Squadron	

The CC is an entity or unit of activity subordinate to an RC which can be associated with a single function to be performed. Each transaction entered into the ASO must be identified to a CC and, in turn, each cost center must be identified to a Program Element. If a particular entity identified as a CC supports more than one PE, cost accounts (CA) will be established so that military personnel costs for the CC can be mapped to the PEs supported. All O&M costs will be assigned to the "predominant" PE.

Cost centers are a key element of the ASO so far as LRA development is concerned. Tables C-6 to C-10 illustrate the CCs available for the various base level logistics functions. Table C-10, Base Operations (PE 27596) was drawn from the CC structure at England AFB in 1972 and illustrates the assignment of CAs where more than one PE was supported by a CC.

TABLE C-6. COST CENTERS - MAINTENANCE

WG HQ

2000 CHIEF OF MAINTENANCE

ORG MAINTENANCE

2200 ORG MAINT
2250 BASE FLIGHT & TRANSIENT AIRCRAFT

FIELD MAINTENANCE

2300 CHIEF OF FLD MAINT
2310 FABRICATION SHOP
2320 PROPULSION SHOP
2330 AEROSPACE SYSTEMS SHOP
2340 AGE
2350 BASE SUPPORT/TRANSIENT A/C MAINT

AVIONICS MAINTENANCE

2400 AVIONICS MAINT

MUNITIONS MAINTENANCE

2500 MUNITIONS MAINTENANCE

GROUND COMM - ELECTRONICS - METEOROLOGICAL (CEM)

2600 GROUND CEM EQUIP MAINT

GSE MAINTENANCE

2900 GSE MAINTENANCE

TABLE C-7. COST CENTERS - BASE SUPPLY

4110 CHIEF OF SUPPLY
4120 MATERIEL FACILITIES
4130 MANAGEMENT AND PROCEDURES
4140 SUPPLIES MANAGEMENT
4150 EQUIPMENT MANAGEMENT
4160 ITEM ACCOUNTING
4170 FUELS MANAGEMENT
4180 ENGINE MANAGEMENT

TABLE C-8. COST CENTERS - TRANSPORTATION

4200 BASE TRANSPORTATION
4210 VEHICLE OPERATIONS
4220 TRAFFIC MANAGEMENT
4230 TERMINAL SERVICE*
4240 VEHICLE MAINTENANCE
4250 VEHICLE MAINTENANCE - NON VIMS BASES

TABLE C-9. COST CENTERS - RPMA

<u>SUBFUNCTION</u>	<u>CC</u>
MANAGEMENT	4400 - 4402
MAINTENANCE & REPAIR	4430 - 4472
UTILITIES	4480 - 4494
MINOR CONSTRUCTION	4420 - 4422
OTHER ENGINEERING SVCS	VARIOUS

USAF Elements of Expense (EEIC)

Operations expenses are accumulated to CC/CA in terms of USAF EEIC. Military personnel costs are recorded at standard rates. O&M funded expenses are recorded in any one of several hundred cost elements which can be grouped into the following categories:

- Civilian Personnel
- Travel and Transportation of Persons

ASIF
Other than ASIF
Per Diem
Passenger Vehicle Rental

- Transportation of Things
 - ASIF
Other than ASIF
Other Transportation Charges
- Rents, Communications, and Utilities
- Printing and Reproduction
- Other Services

Base Produced Utilities
Mobile Equipment Rental
Facilities Projects-Contract
CE Services-Contract
Educational Services
Purchased Maintenance of Equipment
Contract Operated Facilities
Other Contractual Services
Laundry and Dry Cleaning IF

- Stock Fund Supplies and Materiel

Utility Fuels
Aviation Fuels

Missile Propellants
Medical Dental Division
Systems Support Division
Commissary Division
Clothing Division
General Support Division
Exchangeable Equipment

- Non-AFSF Materiel and Equipment
- Other Expense Elements

USAF EEICs can be mapped into DoD Element of Expense (discussed below) and can, of course, be aggregated into more manageable categories. Note, however, that the F&FP is actually prepared in EEIC detail for each PE (see Appendix B).

RC/CC/CA INFORMATION FLOW

No RC/CC/CA detailed information is available at the Air Staff level.² Each base routinely prepares and submits accounting reports to its Major Command. The Major Command then consolidates individual base data by Program Element and forwards the consolidated data to the Air Finance Center at Denver. All Air Staff accounting and control reports are prepared from the aggregated data.

The PE level of aggregation masks organizational and functional content. Table C-10 shows the variety of organic wing elements included in PE 27596, Base Operations. Table C-11 shows that the prime PE (i.e., F-4 Squadrons) contain mission elements (fighter squadrons), administrative elements (wing and logistics staff) and maintenance elements (the various maintenance squadrons).

If the Wing is the host and operates the base, then a number of non-organic units will also be included in the PE aggregations. These, with their PE assignment, would include:

Aerospace Rescue and Recovery - PE 35113, ARR
PE 27596, BOS

Communication SQ or Flight - PE 33112, AIRCOM
PE 35114, Traffic Control
PE 27595, Base COMM

Air Postal/Courier - PE 27596, BOS

²We understand that CC and other base level data will be collected and stored at Air Staff level to support the USAF VAMOSC effort. See Appendix D.

Auditor General	- PE 27596, BOS
Office of Special Investigations	- PE 27596, BOS
Base Weather Detachment	- PE 35111, Weather PE 27596, BOS

Thus, PE aggregations available to the Air Staff do a poor job of identifying functions performed. In addition, actions which impact a Wing or a base involve many PEs and several MFPs. In theory, a simple rearrangement of RC/CC data by Major Commands could restore functional identity so that ASO data could serve as inputs to LRA preparation.

ASO SUPPORT TO LRA DEVELOPMENT

The ASO is a highly detailed data base of historical cost information which can be used to develop cost factors for projecting logistics resource requirements of base level activities in the functional and subfunctional categories proposed for the LRA. Because costs are identified to cost centers which reflect organizational entities that distribute their efforts over several weapon systems (MD), a serious joint cost allocation/identification problem exists. MD identification, to some extent, is provided by the program element code used in the ASO, but the following problems exist:

- The rationale and procedures used to assign manpower to PEs is not clear and needs to be evaluated.
- Extensive use is made of the training program element in assigning manpower to PEs. This practice results in substantial amounts of manpower spaces identified to training that cannot be related to weapon systems.
- If direct identification of certain Operations and Maintenance cost elements (e.g., stock fund supplies, etc.) weapon systems is not convenient then the joint cost problem is solved by assigning all costs to the predominant PE.
- Costs for central support functions such as depot maintenance are aggregated in only one cost center in the ASO. No detail is available for associating depot maintenance costs to subfunctions or weapon systems. Other data systems (e.g., DoDI 7220.29 Uniform Depot Maintenance Cost Accounting System) are available for this purpose.

Notwithstanding the above limitations of the ASO as a source of historical weapon system cost information, the ASO has the data for identifying base level operation costs

**TABLE C-10. BASE OPERATING SUPPORT
(ENGLAND AFB EXAMPLE)
PE 27596**

<u>23 WG HQ</u>	<u>RC</u>	<u>CC</u>
INFORMATION	40	1040
PERSONNEL	40	1600
<u>23 C.S. GP</u>		
CHAPLAIN	41	1050
ADMIN	41	1100
PROCUREMENT	41	1250
COMPTROLLER	41	1500
PERSONNEL	41	1600
SPECIAL SERVICES	41	1950
<u>23 TRANS SQ</u>		
TRANSPORTATION	41	4200
VEHICLE OPERATIONS	41	4210
TRAFFIC MANAGEMENT	41	4220
VEHICLE MAINT - OVD	41	4240
- REPAIR SHOP	41	4242
- BENCH STOCK	41	4248
- MAT. CTR.	41	4249
<u>23 SECURITY POLICE SQ</u>		
SECURITY POLICE	41	4300
<u>23 SERVICES SQ</u>		
SERVICES	41	4600
REDISTRIBUTION/MARKETING	41	461A
STR		R
SCR		C
MNT		D
SLE		G
DIS		U
CLOTHING SALES	41	4620
COMMISSARY	41	4630
HOUSING SERVICE	41	4650
FOOD SERVICE	41	4670
LINEN EXCHANGE	41	4680
<u>23 MON MAINT SQ</u>		
SQ PRSNL	45	250K

TABLE C-10. BASE OPERATING SUPPORT
(ENGLAND AFB EXAMPLE)
PE 27596 (Continued)

	<u>RC</u>	<u>CC</u>
<u>23 AVIONICS MN SQ</u>		
SQ PRSNL	45	240K
<u>23 FLD MN SQ</u>		
FAB SHOP PRSNL	45	231K
AGE PRSNL	45	234K
TRANSIENT A/C	45	235K
<u>23 SUPPLY SQ</u>		
COMMANDER	45	4110
MAT FAL	45	4120
MGT	45	4130
SUPPLIES MGT	45	4140
EQUIP MGT	45	4150
ITEM ACC'T	45	4160
FUELS MGT	45	4170
ENGINE MGT	45	4180
<u>BASE-WIDE EXPENSES</u>		
LOCAL DRAYAGE & CIV PCS	46	8101
SUPPORT OF AFSF	46	8411
OFFICE MACHINE REPAIR	46	8461
NON FLT POL	46	8471
COMM	46	8481
MISC COMM EXP	46	8491
MIL TRAINEES	46	8611

TABLE C-11. COST CENTERS INCLUDED IN THE PRIME PE FOR
A TYPICAL FIGHTER WING

<u>Case Center</u>	<u>Descriptions</u>
1010	Wing Commander
1060	Wing Staff - Office of Safety
1300	Deputy Commander, Operations
30XX	Tactical Fighter Squadrons
1200	Deputy Commander - Logistics
2000	Wing Staff - Chief of Maintenance
2200	Organization Maintenance Squadron
2300	Commander, Field Maintenance Squadron
2310	Fabrication Shop, FMS
2320	Propulsion Shop, FMS
2330	Aerospace System Shop, FMS
2340	AGE Shop, FMS
2400	Avionics Maintenance Squadron
2500	Munitions Maintenance Squadron
97XX	Aviation POL, Case Distribution

to meaningful logistics functions and subfunctions. This data has never been regularly reported to headquarters USAF or OSD; therefore, there is an opportunity to make a substantial improvement in the visibility of base-level logistic resources by tapping into this rich source of data.

The ASO will not be very useful for subfunction or weapon system identification for central support (MFP 7) resource costs, but several other OSD and internal USAF reports are available for this purpose. Indeed, cost information at the MDS level is regularly reported for depot maintenance, and development work is in progress to improve accounting and reporting procedures.

DOD FUNCTIONAL CATEGORY ACCOUNTS

DoD Instruction 7220.20 requires that the Air Force have the capability to present historical operations cost data by 13 well defined functional categories. Paragraph IV-A of the instruction states:

"Expense accounts will be established in such a way that expenses are collected for each expense element, within each functional category, within each program element applicable to the operating activity...."

In complying with this instruction, the Air Force modified its basic accounting system for operations by: (1) mapping USAF EEICs to DoD cost elements, and (2) mapping the basic RC/CC/CA system to standard DoD Functional Category Accounts (FC). Table C-12 defines the FCs and shows the RC/CC content of each. Table C-13 shows the 18 DoD Elements of Expense.

The Instruction does not call for routine reports, but the services have been required to maintain the capability to produce reports if asked. So far as we know, no such requests have ever been made. Thus, the FC capability, effective since July 1, 1968, represents an extensive, but perhaps totally untapped source of historical data. It seems useful to examine the utility of this data base as a source of LRA planning factors.

The FC data base, as mentioned above, is derived from the USAF accounting system for operations and covers only the O&M and Military Personnel Appropriations. Its utility as a source of historical data for base level logistics functions is thus closely linked to the accounting system. However, the FC codes add an additional dimension to the data since no functional detail below program element is available from standard accounting reports.

Table C-14 maps the accounting structure of a typical TAC host wing to program elements and FCs by Wing organizational units. Treatment of base-wide expenses and non-reimbursable support to tenants is also included. Note, however, that all possible allocations (through cost accounts) to the Training PE (27597) are not shown.

While the table is interesting and shows the diversity of resource allocations for a wing (3 MFP and at least 13 PE), it is more useful to track some of the more interesting PEs. The Prime PE (F-4 Squadron, for example) can be broken down as follows:

F-4 Squadrons (PE 27128)

<u>01-Mission OPS</u>	- includes mission squadrons, Wing OPS staff and POL
<u>03-Maintenance</u>	- includes the Chief of Maintenance, and the Maintenance Squadrons
<u>13-Administration</u>	- includes the Wing Commanders and their immediate staff, Office of Safety and the Logistics Staff

TABLE C-12. DOD FUNCTIONAL ACCOUNTS

DOD CODE	DOD DESCRIPTION	RELATED COST CENTERS
01	<p><u>Mission Operations</u></p> <p>Includes expenses incurred for direct accomplishment of the primary objective of a program element including those for any of the functional categories described below when the functional category represents the objective of the program element. This functional category is not applicable to base operations and real property maintenance program element codes. Expenses incurred for education of minor dependents overseas includes charges for maintenance of related real property.</p> <p>NOTE: When establishing cost accounts for base operations program elements within related RC/CCs shown for this functional category assign appropriate functional category rather than A or 01.</p>	1200 Logistics Staff 1250 Procurement & Prod. Staff 1300 Operations 2700 Depot Maintenance 30XX A/C Mission Sq. 3100 Missile Sq. 3200 Photo/TV Operation 3300 ACI Sq. & Det. 3400 Weather Sq. & Det. 3500 Intelligence Ops. 3600 Trng. & Education 3700 Tech/Fly Trng. Sq/Det 3900 Mat'l. Mat. 4800 Depot Supply Ops. 494X Dependent Schools 5XXX Medical Services 82XX JCS Exercises 850X Mission Ops. 855X CS Dependent Education
02	<p><u>Supply Operations</u></p> <p>Expenses incurred for the procurement, receipt, storage, issue, and control of materiel. Includes expenses of ordering and contracting, receiving, storing, care and preservation in storage, rewarehousing, packing and issue, transportation, unit and set assembly, testing, stock control, inventory, administration of supply activities, and related functions. Typical organizational components include: supply management and administration units, item accounting units, self-service supply centers or stores, procurement or purchasing and contracting units, property or equipment management units, fuel units, war reserve replenishment units, and equivalent units.</p>	1250 Procurement & Prod. Staff 41XX Base Supply Activities 843X Prior Yr. Adj. 851X Supply Operations
03	<p><u>Maintenance of Material</u></p> <p>Expenses incurred for calibration; repair or replacement of unserviceable parts, components, and assemblies; manufacturing of components and parts; technical maintenance assistance to operating organizations; modification; alteration; modernization; reclamation; rebuild of parts, assemblies, subassemblies, components, and end-items; and related management, engineering and administration; less credits for costs charged to other units. Typical organization components include: materiel maintenance management and administration units, unique or consolidated materiel maintenance units or shops, repair departments, and equivalent organizations.</p>	2000 Chief of Maint 2100 Consol. Maint Sq. 22XX Org Maint 23XX Fld Maint 2400 Avionics Maint 2500 Munitions Maint 2600 Grd Cam Eq Maint 28XX ICOM Maint 2900 GSE Maint 30XX A/C MSN Sq - Maint 841X Sup of AFSF 852X Maint of MAT 97XX Aviation PCL 846X Office Equip 847X Misc Nonfly PCL
04	<p><u>Property Disposal</u></p> <p>Expenses incurred for preparation for disposal and disposal of scrap, salvage, surplus and foreign excess personal property and lumber and timber products. Includes expenses for administration; recording, reporting and utilization screening; packing, crating, moving and loading; operation of scrap and salvage yards; demilitarization; scrap segregation and preparation; merchandising; and production of lumber and timber products, including forestry management, reforestation, timber stand improvement, flood and erosion control, construction and maintenance of timber area access roads, and fire protection directly connected with timber management. Typical organization components include property disposal units, redistribution and disposal units, and equivalent organizations. Includes charges for the maintenance of related real property and other identifiable and measurable support provided by organization identified with other functional categories.</p>	461X Redist. & Market 486X Salvage & Disposal 853X Property Disposal
05	<p><u>Medical Operations</u></p> <p>Expenses for providing medical and dental care to civilian personnel and to military personnel and their dependents, and related functions. Includes expenses for medical professional services, dental professional services, general outpatient and inpatient services, ancillary services, medical training, dietary services, other medical services including veterinary services, medical records services, and related administration. Typical organizations include dispensaries, mobile medical units, and equivalent organizations.</p>	5XXX Medical Services (NOTE: See Function 01)
06	(NOT USED)	

TABLE C-12. DOD FUNCTIONAL ACCOUNTS (Continued)

DOD CODE	DOC DESCRIPTION	RELATED COST CENTERS
07	<p><u>Personnel Support</u></p> <p>Expenses for support of military and civilian personnel not included in other functional categories. Includes expenses for operation of: food services, such as messes, ration distribution points, bakeries and kitchens, and meat processing facilities; personnel housing, including barracks, bachelor officers' quarters; welfare and recreational activities, such as chaplain activities, libraries, service clubs, theatres, Armed Forces radio and television facilities, bands, newspapers, sports and crafts, education centers, etc.; sales activities, such as commissaries, exchanges, and ship stores, and clothing sales stores; laundry and dry cleaning facilities; and related administration.</p>	<p>1050 Chaplain 16XX Personnel 1950 Special Services 3600 Training/Educ 4620 Clothing 4630 Commissary 4640 Laundry/Dry Clean 4650 Housing Svc 4660 Base Exchange 4670 Food Svc 4680 Linen Exchange 494X Dependent Schools 4990 Other Sup Act 810X Local Dray & Civ PCS 845X Tdy Enroute - PCS 855X CS Dep Educ 956X Personnel Sup 8611 Mil Trainees 8651 Retrain GPS 8661 Transient Pers 8071 Unassigned Pers</p>
08	<p><u>Base Services</u></p> <p>Expenses for miscellaneous supporting logistic services not otherwise included in other functional categories. Includes expenses for operation of: administrative transportation activities, including motor pools, railroads, watercraft and aircraft, and including related equipment maintenance; communication activities; photographic activities; security activities; and similar logistic activities.</p>	<p>30XX Mission Sq 3400 Weather Sq/Det 3700 Tech/Fly Trng Sq/Det 3800 Comm Sq 42XX Transportation 43XX Security Police 4600 Services 47XX Base Ops & Trng 4980 Clinics - Other Cost 848X Admin Comm Cost 849X Other Basewide Exp 357X Base Services</p>
09 10 11 12	<p><u>Operation of Utilities</u></p> <p>Expenses for procurement or production and distribution of utilities except communications. Includes expenses for purchased electrical energy; operation of electric generating plants and distribution systems; purchased steam and hot water; operation of heating plant and distribution systems, including fuels; purchased water; operation of water plants and systems and sewage and waste systems; operation of air-conditioning and refrigeration plants; other purchased utilities and operation of the utility systems, such as gas distribution systems; and related administration.</p> <p><u>Maintenance of Real Property</u></p> <p>Expenses for the maintenance and repair of real property, less charges made to other functional categories (see AF codes A and D above). Includes applicable expenses incurred by building trades shops, construction units, grounds and pavement units, machine shops, quarries, construction equipment units, real property management, engineering and administration offices, and equivalent organizations. Does not include costs of minor construction.</p> <p><u>Minor Construction</u></p> <p>Expenses for the erection, installation, or assembly of a new real property facility; the addition, expansion, extension, alteration, conversion, or replacement of an existing real property facility; or the relocation of a real property facility from one installation to another. Excludes the costs of minor construction projects financed by military construction funds.</p> <p><u>Other Engineering Support</u></p> <p>Expenses for providing miscellaneous real property services, including fire protection, custodial services, entomology services, refuse collection and disposal, and snow removal and ice alleviation. Includes rental of real property not otherwise identifiable; and post engineer, civil engineer, or public works management and engineering not otherwise identifiable. Also includes costs associated with Red Horse mission accomplishment.</p>	<p>NOTE: Combined into code 11 and includes:</p> <p>44XX Base Civil Engineering 4500 Red Horse 4X41 (RC Code 97) PY Exp Ce</p>

TABLE C-12. DOD FUNCTIONAL ACCOUNTS (Continued)

DOD CODE	DOD DESCRIPTION	RELATED COST CENTERS
13	<u>Administration</u> Expenses of general and administrative functions not performed as organic support of organizations covered by the foregoing functional categories. Includes expenses incurred for command, management, administration, intelligence, inspection, information, legal, financial, and related functions. Includes expenses of automatic data processing when performed on a service center basis or when performed by a component of the organizations performing the foregoing general and administrative functions.	0010 Sec of the AF 01XX HQ, USAF, Major Cmd. & to Agencies 09XX 1010 Base Commander 1020 Judge Advocate 1030 Inspection 1040 Information 1060 Safety 1070 Med Svc Staff 1080 Manpower Staff 1090 Security Police 1100 Admin 1200 Logistics Staff 1220 Supply & Services 1230 Maintenance 1240 Transportation 1260 Spec Log Mat Act 1300 Operations 1400 Plans/Program 1500 Comptroller 1600 Personnel 1700 C2 Staff 1800 Telecom/Flt Fic Staff 1990 Unique Admin 4910 Off Mach & Eq Maint 4930 GSEA 859X Admin 89XX Contingencies & Misc

TABLE C-13. DoD ELEMENTS OF EXPENSE

<u>Code</u>	
1	Military Personnel
2	Military Trainees
3	Military Unassigned
4	Civilian Personnel
5	Travel of Personnel
6	Transportation of Things
7	Utilities and Rents
8	Communications
9	Purchased Equipment Maint (Intra - DoD)
10	Purchased Equipment Maint (Commercial)
11	Printing and Reproduction
12	Other Purchased Services
13	Aircraft POL
14	Ship POL
15	Other Supplies
16	Equipment
17	Other Expense
18	Service Credits

Thus, operations costs are clearly and relatively clearly segregated. This presentation seems to be of considerably more value than the historical data available at the Air Staff level from the accounting system. In addition, each FC can be disaggregated to DoD Element of Expense (and possibly to USAF EEIC). Thus, PE 27128 maintenance costs (in dollars) could be displayed as follows:

03-Maintenance

- 01 - Military Personnel
- 04 - Civilian Personnel
- 05 - Travel
- 06 - Transportation
- 09 - Purchased Equipment Maintenance (Intra Service)
- 10 - Purchased Equipment Maintenance (Commercial)
- 12 - Other Purchased Services
- 15 - Other Supplies
- 16 - Purchased Equipment

and others as appropriate.

TABLE C-14. DOD FUNCTIONAL CATEGORIES APPLIED TO A
TYPICAL TAC HOST WING

RC/CC	DESCRIPTION	PROGRAM ELEMENT	DoD FC
<u>Wing Staff</u>			
1010	Commander	Prime	13-Admin
1020	Judge Advocate	27596	13-Admin
1040	Information	27596	13-Admin
1042	Public Affairs	91214	13-Admin
1060	Safety	Prime	13-Admin
1500	Comptroller	27596	13-Admin
1600	Personnel	27596	07-Pers Spt
5400	Medical Activity	Prime	05-Med Ops
1697	Social Action	88097	07-Pers Spt
5600	Drug Abuse	91216	01-MSN Ops
1300	Operations	Prime	01-MSN Ops
1200	Logistics Staff	Prime	13-Admin
1210	Log Plans	Prime	13-Admin
2000	Chief of Maintenance	Prime	03-Maint
<u>Mission Squadrons</u>			
30XX	Mission Squadrons	Prime	01-MSN Ops
<u>Maintenance Squadrons</u>			
2200	Org Maint Sq	Prime	03-Maint
2300	Fld Maint Sq	Prime	03-Maint
231K	FMS FA& Shop	27596	03-Maint
234K	FMS - AGE Shop	27596	03-Maint
235K	FMS - Transient A/C	27596	03-Maint
2400	Avionics Maint Sq	Prime	03-Maint
240K	AMS - Precision Lab	27596	03-Maint
2420	AMS - Simulators	27596	03-Maint
2500	Munitions Maint Sq	Prime	03-Maint
<u>Combat Support Group</u>			
1100	Administration	27596	13-Admin
1050	Chaplain	27596	07-Pers Spt
1250	Procurement	27596	02-Sup Ops
1500	Comptroller	27596	13-Admin
1600	Personnel	27596	07-Pers Spt
1610	Off Duty Education	81413	07-Pers Spt
1930	Personnel Services	27596	07-Pers Spt
195K	Personnel Services	81413	07-Pers Spt
4700	Operations	27596	08-Base Svc
4730	Ops - Ground Training	27596	08-Base Svc
4740	Ops - Gun Range	27597	08-Base Svc
4940	Dependent Schools	27596	07-Pers Spt
<u>Student Squadrons</u>			
1910	Student Squadrons	27597	13-Admin
<u>Services Squadrons</u>			
4600	Commander	27596	08-Base Svc
461X	Redist. & Market	2759X	04-Prop Disp
463X	Commissary	27596	07-Pers Spt
4650	Housing & Bilieting	27596	07-Pers Spt
467X	Food Services	27596	07-Pers Spt
4680	Linen Exchange	27596	07-Pers Spt
<u>Other Wing Organizations</u>			
41XX	Supply Sq	27596	02-Sup Ops
4620	Sup Sq - Clothing	27596	07-Pers Spt
42XX	Transportation Sq	27596	08-Base Svc
43XX	Security Police	27596	08-Base Svc
44XX	Civil Engineer GP	27596	12-Civ Engr
4991	AF Band	27598	07-Pers Sup
<u>Common Expense Accounts (Base Wide)</u>			
8131	Drayage/CIV PCS	27596	07-Pers Spt
822X	JCS Exercises	28011	01-MSN Ops
8411	Support to AFSF	27596	03-Maint
8461	Office Eq Repair	27596	07-Maint
3471	Misc Non-Fly POL	27596	03-Maint
3491	Misc Common Expense	27596	08-Base Svc
3492	Other BOS Expense	27596	08-Base Svc
3611	Mil Trainee - PCS	27597	07-Pers Spt
8651	Mil Transients	81415	07-Pers Spt
3911	Misc Current Expense	91515	13-Admin
4405	CE Cost Distr	27596	12-Civ Engr
97XX	A/C POL Distr	Prime	01-MSN Ops
97XX	A/C POL Distr	27596	08-Pers Spt
<u>Non-Reimbursable Support to Tenants</u>			
90 3700	ATC Fld Trng Units	27596	08-Base Svc
91 4370	OSI Det	27596	08-Base Svc
91 1130	Air Postal	27596	08-Base Svc
91 1550	Auditor General	27596	08-Base Svc
92 3400	MAC Weather Det	27596	08-Base Svc
93 3000	MAC ARR Det	27596	08-Base Svc
94 3800	AFCS Comm Sq	27595	08-Base Svc

An increased and useful level of detail is also available for other base level activities which now are presented in a highly aggregate format. Base Operations (PE 27596), for example, is an aggregate of many functions, logistics, and otherwise. While it is possible to obtain a breakdown of BOS by USAF EEIC, this in no way helps to describe the functions included. Using the FC, BOS can be displayed as follows:

BOS (27596)

<u>02-Supply OPS</u>	- includes the supply SQ and Base Procurement
<u>03-Maintenance</u>	- includes maintenance of base/transient aircraft and certain base-wide expenses
<u>04-Property Disposal</u>	- includes redistribution accounts
<u>07-Personnel Support</u>	- appropriate portions of the Services SQ, Base Personnel, Special Services, dependent schools, clothing sales, and civilian PCS
<u>08-Base Services</u>	- includes Transportation SQ, Security Police Squadron, CSGP Operations, common base expense and support to tenants
<u>13-Administration</u>	- includes elements of WG staff, CSGP Administration and Comptroller

DoD Element of Expense data is, of course, available for each FC. Other PEs containing major base level resources such as RPMA (27594) and Training (27597) have similar detail.

It seems probable that the FCs would yield valuable information for such central support functions as supply depot operations (PE 71111) or inventory control points (PE 71112). Note that the costs of operating the depot under PE 71111 would be charged to FC-01, Mission Operations, which is the primary objective of the PE. The expenses of a depot's supply organization would normally be charged to FC-02, Supply Operations. It is also possible that any maintenance required to preserve the utility of depot inventories would be segregated as FC-03, Maintenance of Materiel. These possibilities have not been investigated, but the additional detail available through the FC system could provide a better understanding of the resources required and conserved for this and similar PEs.

MANPOWER RESOURCE DISPLAYS

Manpower data in terms of authorized strengths is available both at the base level and through the CMDB. Because of the FAC, which can be mapped to unit designation (Wing, Squadron, Detachment), to cost centers, to DoD Functional Category and to Program Element, manpower authorizations can be displayed at almost any desired level of detail.

Table C-15 illustrates how FAC codes relate to CC, FC, and PE for the Supply Squadron; Table C-16 covers an Avionics Maintenance Squadron, and Table C-17 illustrates a Communications Squadron. The detail available appears much more than would be required for routine LRA outputs. Nonetheless, FACs offer the logistics manager a powerful tool in identifying manpower resources assigned to logistics functions. FACs are defined for and mapped to all USAF organizations and cost centers and are not, of course, limited to the examples shown here.

TABLE C-15. FUNCTIONAL ACCOUNT CODE (FAC) MAPPED TO COST CENTER (CC), FUNCTIONAL CATEGORY (FC), AND PROGRAM ELEMENT (PE)

Supply Squadron

FAC	Description	CC	FC	PE
410000	Command, Base Supply	4100	02	27596
418000	Command, Engine Management	4180	02	27596
411000	SQ Section, Commander	4110	02	27596
411100	SQ Section, Administration	4110	02	27596
413000	Supply Management/Processing	4130	02	27596
413100	Materiel Inventory			
413300	Supply Procedures/Standards			
413400	Supply Funds Management			
413200	Supply Training Systems			
413500	Supply Administration			
412000	Material Facilities	4120	02	27596
412100	Inspection			
412200	Receiving			
412300	Storage and Issue			
412400	WRM/Mobility			
412500	Self Service Store			
412600	Pick Up/Delivery			
415000	Equipment Management	4150	02	27596
415100	Operations Support			
415200	Equipment Control			
414000	Supplies Management	4140	02	27596
414100	Maintenance Support			
414200	Stock Control			
416000	Item Accounting	4160	02	27596
416100	ADPE & PCAM Operations			
416200	Item Research			
416300	Document Control			
417000	Fuels Management	4170	02	27596
417100	QC-Inspection, POL			
417200	Fuels Storage			
417400	Distribution			
417500	LOX/Propellants			
417600	POL Accounting/Admin			
417700	Gas Dispensing			

TABLE C-16. FUNCTIONAL ACCOUNT CODE (FAC) MAPPED TO COST CENTER (CC), FUNCTIONAL CATEGORY (FC), AND PROGRAM ELEMENT (PE)

Avionics Maintenance Squadron

<u>FAC</u>	<u>Description</u>	<u>CC</u>	<u>FC</u>	<u>PE</u>
240000	Avionics Maint Command	2400	03	PRIME
241000	Communications/Navigation	2400	03	PRIME
241100	Radio			
241200	Radar			
241300	ECM			
241400	Doppler - Inertial Navigation			
245000	Precision Measurement EQ Lab	2400	03	27596
243000	Mission Systems	2400	03	PRIME
243100	Bomb Navigation			
243200	Integrated Sys/Fire Control			
243300	Auto Flight CTRL/Instruments			
243400	Photo Sensors			
243600	Weapons Control - Inertial Nav			
243700	COMM-NAV-PEN AIDS			
246000	Avionics Shop Maintenance	2400	03	PRIME
246100	Avionics AGE			
246200	Automatic Test Stations			
246300	Manual Test Stations			

TABLE C-17. FUNCTIONAL ACCOUNT CODE (FAC) MAPPED TO COST
 CENTER (CC), FUNCTIONAL CATEGORY (FC),
 AND PROGRAM ELEMENT (PE)

Communications Squadron - George AFB

FAC	Description	CC	FC	<u>PE¹</u>
2610	Ground CEM, Chief of Maintenance	2600	03	
2620	Flight Facilities Maint - Non-Radar	2600	03	
2641	Flight Facilities, Radar	2600	03	
2650	Ground COMM System Maint	2600	03	
2651	TTY/CRYPTO			
2653	Telephone Switching			
2654	Telephone Installation/Repair			
2655	Outside Plant Maintenance			
2659	Ground Radio Equip Maint			
3800	Ground COMM/Elect Ops	3800	08	
3801	Admin	3800	08	
3802	Programs Management	3800	08	
3810	Flight Facilities Ops	3800	08	
3811	Conventional Control Tower			
3813	GCA			
3819	ATC Training			
3820	COMM/Elect Ops	3800	08	
3821	Admin			
3822	CRYPTO Accounting			
3834	Ground Radio Ops - MARS	3800	08	
3870	Telephone Operations	3800	08	
3871	Admin PBX			

¹PE assignments not clear. Functions listed would normally be assigned to PE 33112, AIRCOM; PE 35114, Traffic Control; PE 27595, Base Communications, and possibly PE 27416, TAC C&C Systems.

APPENDIX D

COMPARISON OF LRA AND O&S COST REPORTING SYSTEMS

The increasing DoD-wide interest in life cycle costs in general and operating and support costs (O&S) in particular has resulted in intensive efforts to collect, measure and display O&S cost information. LMI has assisted OSD by preparing preliminary cost guidelines defining O&S cost requirements necessary to support the DSARC process. In addition, the USAF Operating and Support Cost Estimating Reference System (OSCER) project and the USAF Maintenance Cost System (MSC) have been evaluated. This appendix discusses these O&S cost efforts with particular emphasis on their relationship to an LRA.

O&S COST THEORY

O&S cost for DSARC purposes, which have dominated developments in the O&S area, are distinctly different in intent and content than the O&S costs included in the FYDP or the LRA. These differences are important considerations in evaluating the utility of DSARC related information systems to LRA development.

DSARC costs are, of course, highly weapon system oriented. More important, since DSARC deals with the choice of alternative systems or system design, O&S cost for DSARC purposes:

- Concentrate on "avoidable" or "future variable" costs, that is, those that would change if the system were added (or deleted) and those that would change with activity rates, readiness rates, or deployment
- Are comparative in nature and tend to identify (and quantify) relative cost differences among alternatives

Thus, O&S costs included in DSARC considerations are limited to those that are impacted by the decision at hand. Large portions of support, if considered fixed, are eliminated from the consideration. To be sure, impacts on support costs such as base supply activities are considered, but only the variable portion is included. The FYDP, on

the other hand, considers both the fixed and variable portions of O&S costs and, as the other appendices show, does not identify many support costs to specific systems. In fact, the decision to develop, procure and introduce a new weapon system could impact a large number of Program Elements in several MFPs. The whole requirement for greater O&S cost visibility stems from the fact that changes such as the introduction of a new aircraft are almost completely masked in the FYDP structure.

Partly as a result of the DSARC O&S cost requirements and partly as the result of the VAMOSC effort, OSD and the Air Force have developed or are developing information systems designed to obtain better measurements of O&S costs. Some of those are discussed below.

OSCER

The OSCER system was developed in response to OSD Management Objective 9-2 which requires the services to "Develop and implement a cost effective system to identify maintenance and operating costs by weapon systems." Although a complete structure exists, OSCER is undergoing constant development and capabilities beyond those discussed here can be anticipated.

Historical costs in OSCER are attributed to aircraft systems at the MDS level of aggregation through equations for allocating or estimating costs of MDS aircraft systems using data from 14 USAF data systems. The basic information flow in OSCER is summarized in Figure D-1. O&S costs are not directly identified to aircraft systems in present USAF accounting and data systems; therefore, allocation and estimation methods are necessary to achieve weapon system cost visibility without changing or creating data systems. OSCER was developed under an explicit constraint that all data come from existing USAF data systems.

The major differences between LRA and OSCER are summarized in Table D-1. The two systems have fundamentally different purposes and approaches, and it is conceivable that OSCER cost information will be unsuitable for LRA. In addition to its concentration on avoidable and comparative costs, OSCER has been designed as a cost accounting

FIGURE D-1. OSCER BASIC INFORMATION FLOW

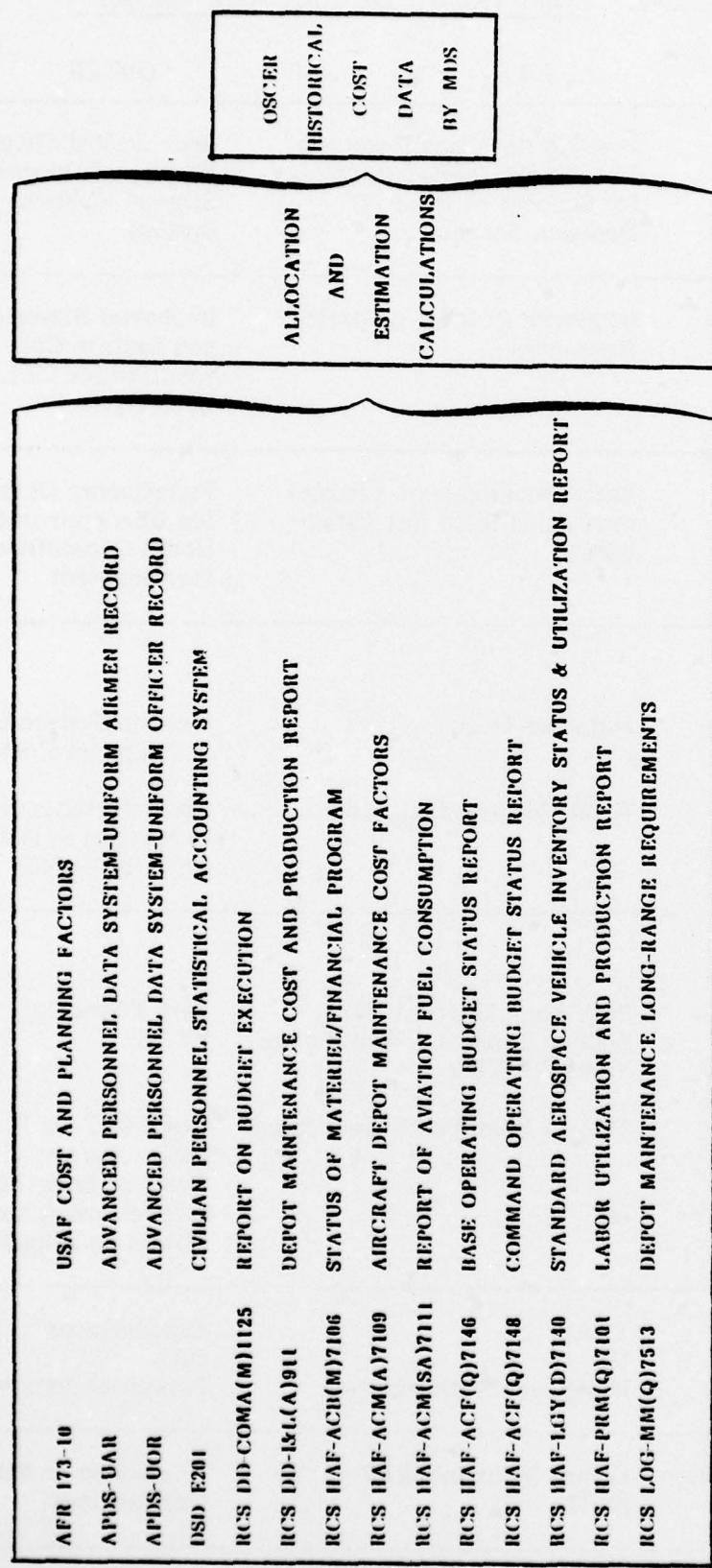


TABLE D-1. COMPARISON OF LRA AND OSCER

	LRA	OSCER
A. Purpose	Provide Logistics Resource Data in Program Categories for Support of the PPB Decision Process	Provide Visibility of Historical Operating and Support Costs by Weapon System
B. Goals	Improved PPB for Logistics Resources	Improved Historical Weapon System Cost Perspective for Multiple Uses/Users
C. Status	Early Development - Implementation Date Not Established	Functioning Data System for USAF Aircraft - Additional Capabilities Under Development
D. Costs Covered		
- Cost Elements Included	Logistics Costs	Weapon System Operating and Support Costs
- Portions of Costs Included	Total Costs as Budgeted	Costs Variable with Changes to Weapon System Inventory Activity Levels
E. Timing		
- Period Covered	Past Year, Current Year, Budget Year, and Five Future Years for TOA	Past Years Only From FY 75
- Costs Incurred	TOA in Year Funds Requested	Costs in Year Weapon System Inventory/Activity Occur - Costs of Long-Lived Resources are Amortized to Obtain an Annual Cost
F. Resource Measures Used	TOA UE Manpower Authorization	Expenditures OA Personnel Assignments
G. How MDS Identification Achieved	Direct Input to F&FP by Air Staff	Allocation or Estimation Calculations

system. As such, OSCER deals with consumption of investment funded materiel, assigned aircraft, and assigned personnel whereas LRA deals with TOA for investment funded materiel, UE and authorized personnel. OSCER uses amortization and allocation procedures not compatible with LRA or FYDP concepts. Finally, OSCER cost elements cannot be mapped to appropriate categories or to program elements.

The present OSCER Chart of Accounts (functional categories) is shown in Table D-2; the cost elements are shown (as suffix coding) on Table D-3. The cost elements are defined in terms of specific entries in various reporting systems. This allows the cost elements to be mapped to functional account code, RC/CC, and EEIC (see Appendix C for a discussion of these codes). However, since OSCER picks up only the variable portion of some of these entries and an allocated share of others, the mapping is more useful for definition purposes than for obtaining the actual cost entry.

Although the actual cost entries contained in OSCER may not be useful for programming purposes, some of the supporting data being collected could be useful. USAF plans to collect and store base level RC/CC data along with data from the other reporting systems listed in Figure D-1. If these plans materialize, the resulting data bank could become a useful information source. In addition, some of the O&M funded cost element planning factors could also have application. Since the difference between O&M TOA and expenditures is usually small, then OSCER factors by weapon systems could be useful for programming certain O&M categories. Such factors are now used in F&FP preparation.

MAINTENANCE COST SYSTEM (MCS)

The MCS is a management information system for collecting and reporting base level maintenance costs. It is designed to capture total costs incurred and to permit the consolidation of both depot and base level maintenance costs into one report showing Air Force materiel maintenance. Inputs to MCS are derived from the Maintenance Data Collection System (AFM 66-1), Standard Base Supply System (SBSS), the Accounting System for Operations (ASO), and other sources.

TABLE D-2. OSCER CHART OF ACCOUNTS (AIRCRAFT)

OPERATIONS

1XXX Base-Level Operations

11XX Flying Operations

- 1110 Aircrew
- 1115 Unit Administration/Life Support
- 1120 Operations Staff
- 1130 Aviation POL

12XX Weapon System Maintenance

- 1210 Consolidated Maintenance
- 1220 Organizational Maintenance
- 1230 Field Maintenance
- 1240 Avionics Maintenance
- 1250 Munitions Maintenance
- 1290 Chief of Maintenance

13XX Base Operations Support (Except RC/CC 5XXX)

- 1310 Real Property Maintenance Activity (RPMA)
- 1320 Base Communications
- 1330 Base Support (housekeeping)

15XX Tactical Air Control, TAC only (future)

SUPPORT

2XXX Depot Operations

21XX Depot Maintenance (IF) - Organic Plus Contractual

- 2110 Complete Aircraft
- 2120 Engine Repair
- 2130 Acft/Engine Accessories & Component Repair
- 2140 Electronics and Communications Repair
- 2150 Armament Repair
- 2160 AGE Repair

22XX Director of Distribution (D/D) - PEC 71111F

23XX Director of Materiel Management (D/MM) - PEC 71112F

24XX Director of Procurement (D/P) - PEC 71113F

TABLE D-2. OSCER CHART OF ACCOUNTS (AIRCRAFT) (Continued)

SUPPORT

25XX ALC Base Operating Support (Except RC/CC 5XXX)

- 2510 ALC Real Property Maintenance
- 2520 ALC Base Communications
- 2530 ALC Base Support (housekeeping)

26XX Second Destination Transportation - PEC 78010F

- 2610 Via ASIF--Other
- 2620 Via MSC--(former MSTS)
- 2630 Via Commercial Air
- 2640 Via Commercial Surface CODE
- 2650 LOGAIR
- 2660 Port Handling Cost--MTMTS
- 2670 Other Transportation Costs--Packing, Crating, Temporary Storage

3XXX Recurring Investments (Appropriations 3010, 3020 and 3080)

31XX Exchangeable Replacement

33XX Common Ground Support Equipment (GSE)

34XX Training Munitions

35XX Modifications

- 3510 Modification (Class IV and V)
- 3520 Modification Initial Spares
- 3530 Component Improvement

4XXX Acquisition and Training Cost by Career Field

41XX Flying Status

411X Officers

- 4111 Fixed 1/
- 4112 Variable 2/

412X Enlisted

- 4121 Fixed 3/
- 4122 Variable 5/

TABLE D-2. OSCER CHART OF ACCOUNTS (AIRCRAFT) (Continued)

SUPPORT

42XX Non-Flying Status

421X Officers

4211 Fixed 4/
4212 Variable 5/

422X Enlisted

4221 Fixed 3/
4222 Variable 5/

5XXXX Other Personnel Support

51XX PCS

5110 Officers
5120 Enlisted

52XX Medical

5210 Officers
5220 Enlisted

NOTES

1/ Officer Acquisition (USAFA, ROTC, OTC, etc); UPT; UNT; Basic Survival Training;
Water Survival Training

2/ CCTS

3/ Enlisted Basic Training (Lackland AFB)

4/ Officer Acquisition (USAFA, ROTC, OTS, etc.)

5/ Technical School Training at ATC/s Tech Training Centers

TABLE D-3. OSCER COST ELEMENTS

.00 No Suffix Coding

.10 Military Labor

- .11 Officers Pay and Allowances (Active Duty)
- .12 Enlisted Pay and Allowances (Active Duty)
- .13 Officers Pay and Allowances (AF Reserve) - MAC ONLY
- .14 Enlisted Pay and Allowances (AF Reserve) - MAC ONLY
- .15 Officers Pay and Allowances (ANG)
- .16 Enlisted Pay and Allowances (ANG)
- .17 Officers Pay and Allowances (Military Trainee)
- .18 Enlisted Pay and Allowances (Military Trainee)

.20 Civilian Labor (Includes Direct Hire Local Nationals)

- .21 Civilian Pay and Other Compensation (EEIC 39X Except 391)
- .22 Overtime (EEIC 391)

.30 Civilian Labor (Includes Indirect Hire Local Nationals)

- Indirect Hire Labor Contracts with Foreign Governments Only - EEICs 511 and 512. Includes: base pay, lump sum leave payments, holiday pay, night work differentials, bonuses, overtime and separation allowances.

.40 TDY Expense

- .41 AFSC Transportation Expenses (EEIC 407)
- .42 Commercial Transportation Expenses (EEIC 408)
- .43 Per Diem Expenses (EEIC 409)

.50 Supplies, Materiel and Expense Equipment

- .51 Stock Fund Supplies and Materiel Issues (EEIC 60X; X ≠ 1, 2, or 4)
- .52 Base Procured Supplies and Materiel Issues (EEIC 61X; X ≠ 4)
- .53 Stock Fund Expense Equipment (EEIC 63X; X ≠ 4)

.60 Reserved

.70 Contractual Expenses (AFLC Only)

- .71 Contractual Services (Labor & Materiel)
- .72 Government Furnished Materiel (GFM) - Expense
- .73 Other Contract Expenses

TABLE D-3. OSCER COST ELEMENTS (Continued)

.80 Base Command Contractual Expenses (excl AFLC)

.90 Other Expenses and Miscellaneous Cost

- .91 Administrative = Depot Maintenance (Acct 21XX)
- .92 RPM, Other
- .93 COMM, Other
- .94 Base Operation, Other
- .95 Wing/Base Commander, Other
- .96 D/D, Other
- .97 D/MM, Other
- .98 D/P, Other

MCS estimates maintenance labor costs using 66-1 manhours by maintenance action and factors for obtaining direct labor dollars. Maintenance overheads (or non-productive labor) are allocated among weapon systems support on the basis of direct labor.

Maintenance materiel costs are obtained from SSDS on the basis of issues from supply. Investment funded exchange items are charged at a flat percentage of procurement costs as a proxy for overhaul costs. The costs of contractual services, purchased maintenance, TDY, rents, communications, and other base costs are obtained from the ASO.

The MCS achieves weapon system identification by allocating those labor and materiel costs not identified to a weapon system. Overhead and non-productive labor hours are allocated on the basis of identified direct labor hours while common materiel is allocated on the basis of identified direct materiel charges.

The labor costs recorded in MCS are not useful for programming purposes. Maintenance organizations are staffed on the basis of wartime utilization rates which are in general much higher than peacetime rates. The Logistics Composite Model (LCOM) is a computer simulation that is normally used to determine authorizations for maintenance organizations. It was described in the FY 77 Manpower Requirements Report to Congress as follows:

"LCOM was designed, as an essential element of the regularized Air Force manpower requirements determination process, to simulate a maintenance environment which can be used to accurately predict wartime planning requirements to support the national strategy. It considers the effect on maintenance manpower requirements of such factors as deployment/mobility operations, sortie rates, aircraft failure rates and spare parts availability. It also insures that sufficient maintenance manpower is provided to allow the Air Force to meet wartime requirements for deploying certain units to multiple locations."

"After careful review of test results, LCOM was confirmed as a viable tool for determining aircraft maintenance manpower requirements and is being applied to all major tactical aircraft systems."

Information on stock funded spares, which is part of MCS materiel costs, may form a useful input to LRA. Thus, MCS data is drawn from SSDS which provides significantly

better weapon systems visibility than the ASO. The MCS treatment of investment funded materiel is inappropriate for programming purposes.

DSARC AIRCRAFT GUIDELINES FOR O&S COSTS

LMI has assisted OSD by preparing preliminary Aircraft Guidelines which define and structure the components of O&S costs to be included in DSARC reviews. While the Guidelines may well be revised, the basic principals are firmly established so that a meaningful comparison of the Aircraft Guidelines and the LRA can be made.

LRA is designed to support the programming process while the Guidelines are designed to support weapon system acquisition. Comparison of the two must, therefore, consider the following factors:

- LRA is designed to support the programming process over the five-year planning cycle; the Guidelines are designed for weapon system analysis over the life cycle of the system. The life cycle is usually greater than five years.
- LRA covers logistics resources (broadly defined) only; the Guidelines include all O&S resources.
- LRA groups resources by functions and identifies to systems only those resources directly attributable to the system (minimal allocation of joint cost); the Guidelines include such directly attributable resources, but also include an allocated slice of all O&S resources deemed to be variable with system changes or changes in utilization.

These differences in purpose and coverage will cause differences in the magnitude of "costs" between those displayed in the LRA and those resulting from the Guidelines even where cost elements are identically defined.

The proposed cost structure in the Guidelines is as follows:

- Support Investment
- Deployed Unit Operations
- Below Depot Maintenance
- Installation Support
- Depot Maintenance
- Depot Supply

- Second Destination Transportation
- Personnel and Training Support
- Sustaining Investment

Table D-4 compares the Guidelines two Investment categories with the contents of the LRA. In most cases, the definitions of the entries will be identical. Note, however, that the LRA will include only materiel funded through investment appropriations. Any O&M materiel, particularly stock fund would be included in the maintenance function as maintenance materiel. In addition, the Guidelines costs cover the entire system life cycle while LRA is limited to the FYDP planning horizon. It seems probable that the Guidelines emphasis will be on consumption rather than funding.

TABLE D-4. COMPARISON OF INVESTMENT CATEGORIES

<u>Guidelines</u>	<u>LRA</u>
Support Investment	
Support Equipment	AGE
Training Eq & Svc	Not Clear
Documentation	Not Clear
Initial Spares	Initial Spares
Spare Engines	Included in Initial Spares
Facilities	MILCON Appropriation
WRM	WRM
Sustaining Investment	
Replenishment Spares	Replenishment Spares
Replenishment-AGE	Replenishment Spares
Modification Kits	Mod Kits IV/V
Training Ordnance	Not Clear

Most of the Guidelines category, Deployed Unit Operations, is excluded from LRA.

The subcategories of this Guideline entry are:

- Aircrabs
- Command Staff
- POL

- Security
- Other Deployed Manpower
- Personnel Support

Note that the first five subcategories include military and civilian (if any) pay only. All materiel costs are included in Personnel Support. All costs are of the future variable type.

The LRA will include some items covered in the Guidelines categories. These are the logistics staff (CC 1200) in Base Operations and, where appropriate, Aerospace Systems Security (CC 4350, 4360, 4370 or 4380) identified to the weapon system. LRA entries will, of course, include both labor and materiel.

Below Depot Maintenance as defined by the Guidelines, includes:

- Aircraft Maintenance Manpower for the OMS, FMS and AMS and Chief of Maintenance.
- Ordnance Maintenance Manpower represented by the MMS.
- Maintenance Materiel from the General Support and Systems Support Stock Funds excluding reparables. These are included in Replenishment Spares.

The coverage in the Guidelines is similar to the LRA and in theory a year's expense in one should equal a year's expense in the other. However, the Guidelines do not specifically mention or include base procured, non-stock funded maintenance materiel or purchased maintenance. Note that both the Guidelines and LRA face the same problems associated with identifying maintenance resources to weapon systems.

Installation Support, as defined in the Guidelines includes many of the items covered in the LRA category Base Operations. The Guidelines will, however, include only an allocated slice deemed to be variable with the weapon system while LRA will include all BOS by MFP with no attempt to assign costs to weapon systems.

Depot Maintenance in the Guidelines is designed to include component overhaul as well as direct aircraft (airframe) maintenance. Such costs can be obtained from the Air Force, but they are of doubtful validity. Problems associated with programmed depot maintenance have not been resolved for the LRA.

Depot Supply in the Guidelines is designed to include an allocated slice of Supply Depots and ICP attributable to particular weapon systems based on the avoidable cost approach. Total costs of these activities will be included in the Supply Function for MFP 7 in the LRA. It may be that specific manpower positions in these activities are justified on a weapon system basis. If so, attribution to weapon systems as in the Guidelines could improve the LRA.

The allocation of second destination transportation to weapon systems as done in the Guidelines (and OSCER) does not seem to be a useful function for programming purposes. These transportation charges seem to be as strongly related to basing decisions as to weapon system characteristics. The LRA will, of course, include total second destination transportation as an MFP 7 entry in the Transportation Function.

Personnel training and support in the Guidelines is included in an attempt to show the impacts on MFP 8. These are excluded from the LRA.